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Making Secure Extranet Using VPN and Firewall Through Raspberry Pi

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Abstract: -

According to industry huge demand in security is one of the essential requirements in everything. As device such as IoT device like raspberry pi, etc are smart devices capable of protecting with automated tasks or manually using technologies of automated logging and monitoring.

Need of firewall is too costly for an organization to be proposed. Need of VPN is also too costly for an organization to be efforted. But possible making of it using raspberry pi easily to project extranet using VPN and firewall.

Objective: -

To make secure extranet using VPN and firewall through IOT device raspberry pi.

Introduction: -

What is Secure?

Free from or not presented to threat or damage; safe. To be or get protected; have or acquire security.

What is Extranet?

An extranet is a controlled private organization that permits admittance to accomplices, merchants and providers or an approved arrangement of clients – regularly to a subset of the data available from an association's intranet. An extranet is like a DMZ in that it gives admittance to required administrations to approved gatherings, without giving admittance to an association's whole organization.

How extranet works?

Extranet alludes to arrange inside an association, utilizing web to interface with the pariahs in controlled way. It assists with associating organizations with their clients and providers and therefor permits working in a synergistic way.

What is VPN?

A virtual private association (VPN) widens a private association across a public association and engages customers to get data across shared or public associations like their figuring contraptions were clearly connected with the private association. Applications discovering a VPN may in this manner benefit by the helpfulness, security, and the heads of the private association. Encryption is an average, but not a basic, part of a VPN affiliation.

How VPN works?

A VPN conceals your IP address by allowing the organization to divert it through an uncommonly arranged far off worker run by a VPN have. This implies that on the off chance that you surf online with a VPN, the VPN worker turns into the wellspring of your information. This implies your Internet Service Provider (ISP) and other outsiders can't see which sites you visit or what information you send and get on the web. A VPN works like a channel that transforms all your information into "garbage". Regardless of whether somebody were to get their hands on your information, it would be futile.

Types of VPNs: -

Remote Access

Intranet based Site to Site

Extranet based Site to Site

What is firewall?

In enlisting a firewall is an association security system that screens and controls drawing closer and dynamic association traffic subject to predestined security rules. A firewall conventionally develops a prevention between a trusted in association and an untrusted network, for instance, the web.

How firewall works?

Firewalls are programming or equipment that fill in as a filtration framework for the information endeavouring to enter your PC or organization. Firewalls filter parcels for malignant code or assault vectors that have just been distinguished as set up dangers.

Types of Firewalls: -

Packet-filtering

Circuit-level gateways

Stateful inspection

Stateless

Application-level gateways

Next-gen

Software

Hardware

Cloud

What is raspberry pi?

The Raspberry Pi is a straightforwardness, charge card evaluated PC that interfaces with a PC screen or TV, and utilizations a standard help and mouse, It is a competent little gadget that empowers individuals, considering everything, to investigate taking care of, and to figure out some approach to program in vernaculars like Scratch and Python. It can do all that you'd imagine that a PC should do, from examining the web and playing top quality video, to making accounting pages, word-arranging, and playing.

Simulation: -

Software's: -

https://www.wireshark.org/ : - Wireshark

https://nmap.org/ : - Nmap

Tools: -

https://github.com/jbq/ufw : - firewall

https://github.com/pivpn/pivpn, https://www.pivpn.io/ : - VPN

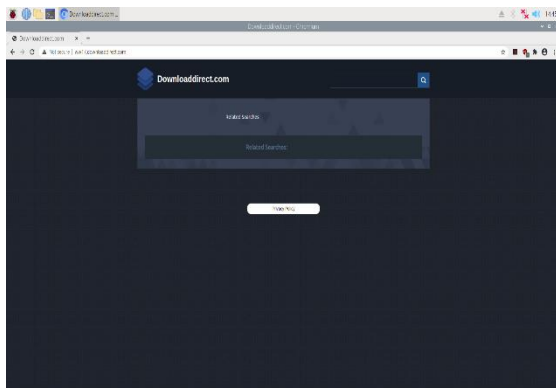https://github.com/Phoenix1747/RouteryPi : - router making of pi
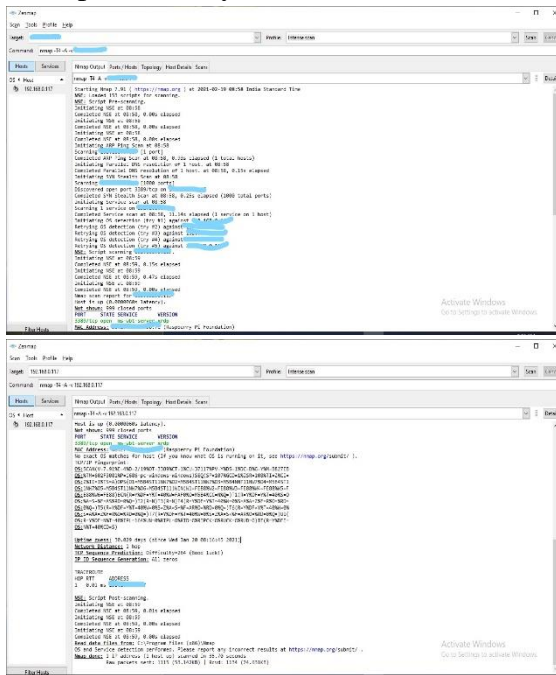
Websites: -

https://www.speedtest.net/ : - speed test

directdownload.com/ : - to check quad 9 working or not
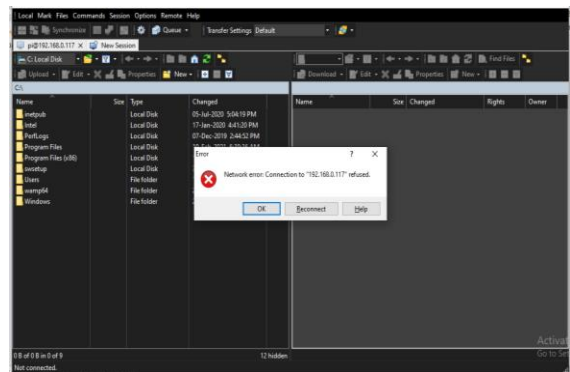
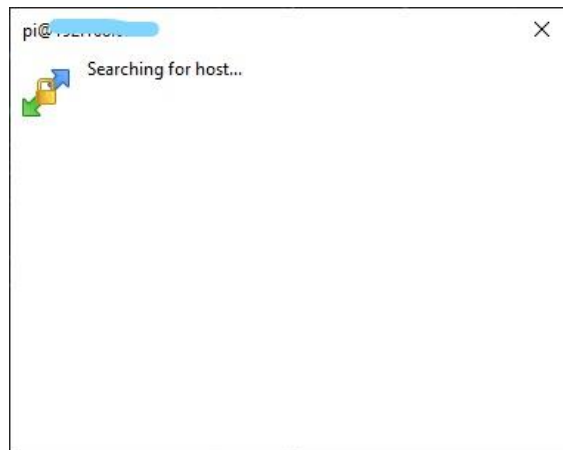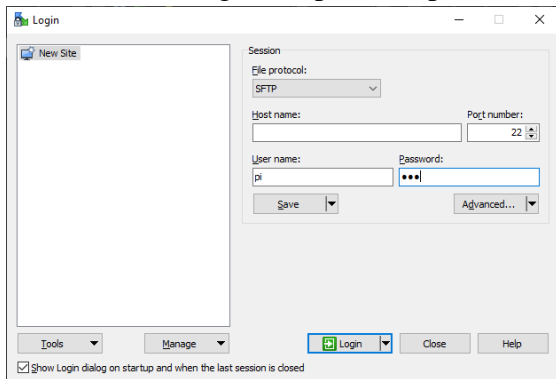https://www.instructables.com/Raspberry-Pi4-Firewall/ : - Firewall

https://www.instructables.com/Raspberry-Pi-Firewall-and-Intrusion-Detection-Syst/ : - IDS
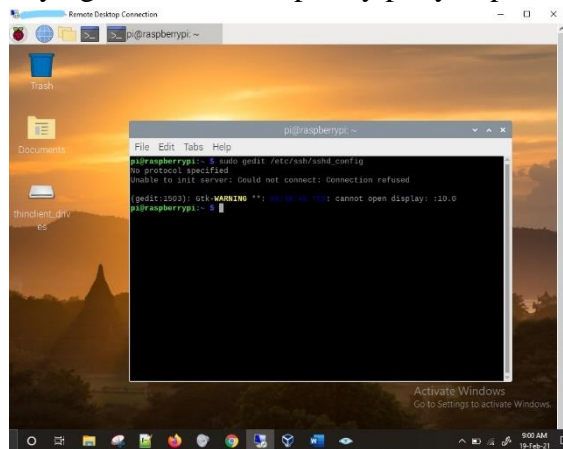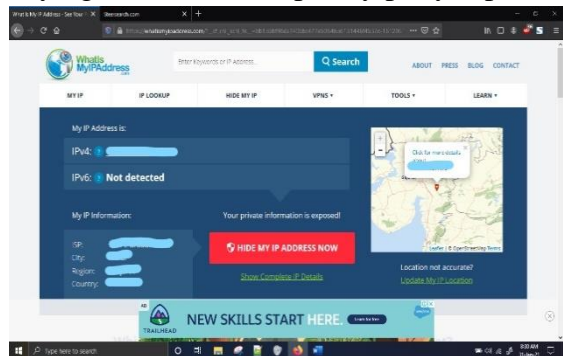
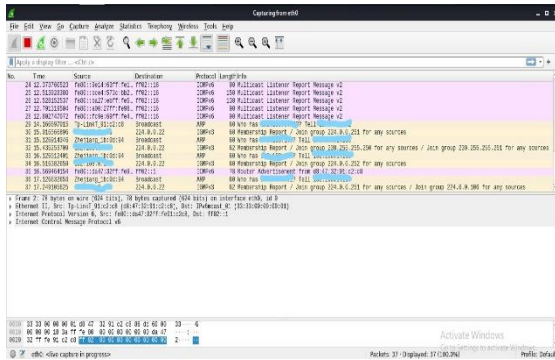VPN protected by Quad9

Firewall Working (Nmap scan report)

Trying to connect rasspberry pi by sftp

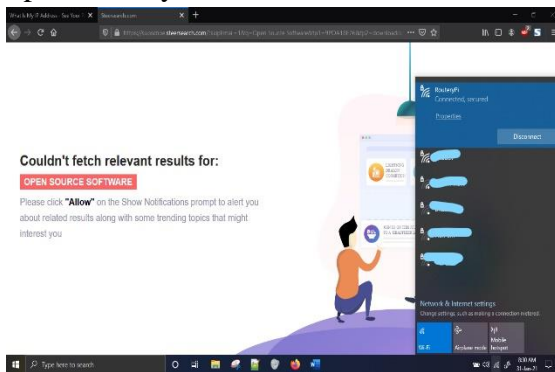Trying to connect rasspberry pi by rdp

Wireshark packect anaylsis report

Speed test by ookla

VPN protected by Quad9

Conclusion: -

The experimental process concludes that making secure extranet using VPN and firewall through IOT device raspberry pi.
First process starts with.
Second process starts with.
Third process is to.
Fourth process is to.
Fifth process start with.
Sixth process starts.

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