How to Troubleshoot Networking Issues (Ubuntu)

Resolving network connectivity issues can be a challenge in Linux. This guide focuses on how to resolve network issues in Ubuntu.

1. **Check network connections:** Ensure that your network cables are securely connected and that your wireless network adapter is turned on if you're using Wi-Fi.

2. **Restart networking service:** Open Terminal and type in the following code:

   sudo systemctl restart networking

   In case that **'sudo systemctl restart networking'** is not working, the error might be due to the '**networking**' service is not managed by system in your Ubuntu version. Proceed to use the following command line in Terminal.

   sudo systemctl restart system-networkd

3. **Restart network manager:** If you are using NetworkManager, you can restart it using the following command:

   sudo systemctl restart NetworkManager

4. **Check network settings:** Verify that your network settings (IP address, subnet mask, gateway, DNS servers) are configured correctly. You can do this by checking the network configuration files in **/etc/network/interfaces** or **/etc/netplan**.

5. **Check firewall settings:** Ensure that your firewall settings are not blocking the network traffic. A latter reference guide will be focusing on UFW (uncomplicated) firewalls. You can check the status of the firewall using the following command:

   sudo ufw status

6. **Check for network interface:** Verify that your network interface is recognized by Ubuntu using the following command:

   ip -a

   Please note that the latest versions of Ubuntu may not use '**ifconfig -a**' command and would use the '**ip -a**' command instead.

   This will display detailed information about your network interfaces, including IP addresses, MAC addresses, and more. If you specifically need to see only the IP addresses, you can use:

   ip a show | grep inet

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IP route show
The **ip route show** command in Linux is used to display the routing table of the system. It shows the currently configured routes, including the destination network or host, the gateway (if any) used to reach that destination, and the network interface through which the traffic will be routed. This command is useful for troubleshooting network connectivity issues and understanding how network traffic is being routed on the system.

7. Use the **Ping** command in Terminal. For example, ping google website or another device in your network.

   ping 8.8.8.8
   ping google.com

8. In Linux, '**dhclient**' is a DHCP (Dynamic Host Configuration Protocol) client used to obtain an IP address and other network confirmation settings from a DHCP server. Here are a few common commands.

   1. **Renew DHCP Lease**: Forces the client to renew its DHCP leave.

      sudo dhclient -r # Release current lease
      sudo dhclient # Request new lease

   2. **Release DHCP Lease**: Releases the current DHCP lease

      sudo dhclient -r

   3. **Specify Interface**: Specify the network interface to use (eg. '**eth0**', '**wlan0**')

      sudo dhclient etho

9. **Testing Latency, Download, and Upload speeds**

   The '**speedtest-cli**' command will test your Internet connect to the nearest speedtest.net server and display the latency, download speed, and upload speed.

   1. Proceed to Install '**speedtest-cli'i**

      sudo apt update
      sudo apt install speedtest-cli

   2. Run the speed test.

      speedtest-cli