# **📄 Draft Networking SOP (GitHub-Ready)**

**Title:** Basic Network Troubleshooting SOP

**Purpose:** To provide a structured method for diagnosing and troubleshooting basic network connectivity issues using standard commands.

**Prerequisites:**

* Windows/Linux system with terminal or command prompt access
* Active network interface
* Basic knowledge of IP addressing

**Procedure:**

1. **Verify Local Stack**
   * Run ping 127.0.0.1
   * Confirms TCP/IP stack is working locally.
2. **Check Local IP Address**
   * Run ipconfig /all (Windows) or ifconfig/ip addr (Linux).
   * Confirm correct IP, subnet mask, gateway, and DNS servers.
3. **Test Local Connectivity**
   * Run ping [local\_IP]
   * Ensures NIC is responding.
4. **Test Gateway Connectivity**
   * Run ping [default\_gateway]
   * Confirms you can reach your local network router.
5. **Test External Connectivity**
   * Run ping 8.8.8.8 or ping 9.9.9.9
   * Confirms internet reachability (bypasses DNS).
6. **Test DNS Resolution**
   * Run nslookup www.google.com
   * Confirms DNS server resolves names.
7. **Trace Route to Destination**
   * Run tracert [destination] (Windows) or traceroute [destination] (Linux).
   * Identifies where packets are being dropped in the path.
8. **Check Active Connections**
   * Run netstat -an
   * Displays active ports and connections (useful for identifying open services).

**Verification:**

* Successful responses at each stage confirm connectivity at that layer.
* Failures pinpoint the exact step where communication breaks down.

**Notes:**

* If loopback fails → TCP/IP stack issue.
* If local IP fails → NIC/driver issue.
* If gateway fails → LAN issue.
* If external IP fails → ISP issue.
* If DNS fails → DNS server issue.

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