- **Identity:** `hostname –I` (or `ip addr show`) — note your IP.
- **Reachability:** `ping <target>` — mention latency and packet loss.
- **Path:** `traceroute <target>` (or `tracepath`) — note any long hops/timeouts.
- **Ports:** `ss –tulpn` (or `netstat –tulpn`) — list one listening service and its port.
- **Name resolution:** `dig <domain>` or `nslookup <domain>` — record the resolved IP.
- **HTTP check:** `curl –I <http/https–url>` — note the HTTP status code.
- **Connections snapshot:** `netstat –an | head` — count ESTABLISHED vs LISTEN (rough).

```
ubuntu:/$ hostname –i
127.0.0.1
ubuntu:/$
ubuntu:/$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: enp1s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 86:3d:2d:36:78:ab brd ff:ff:ff:ff:ff:ff
    inet 172.30.1.2/24 brd 172.30.1.255 scope global dynamic noprefixroute enp1s0
       valid_lft 86309934sec preferred_lft 75520734sec
    inet6 fe80::4444:4937:3da4:6712/64 scope link
       valid_lft forever preferred_lft forever
3: docker0: <NO–CARRIER,BROADCAST,MULTICAST,UP> mtu 1454 qdisc noqueue state DOWN group default
    link/ether 8a:62:73:95:42:92 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
       valid_lft forever preferred_lft forever
ubuntu:/$
ubuntu:/$
ubuntu:/$ ping google.com
PING google.com (142.251.12.139) 56(84) bytes of data.
64 bytes from se–in–f139.1e100.net (142.251.12.139): icmp_seq=1 ttl=101 time=1.53 ms
64 bytes from se–in–f139.1e100.net (142.251.12.139): icmp_seq=2 ttl=101 time=1.58 ms
64 bytes from se–in–f139.1e100.net (142.251.12.139): icmp_seq=3 ttl=101 time=1.56 ms
64 bytes from se–in–f139.1e100.net (142.251.12.139): icmp_seq=4 ttl=101 time=1.69 ms
^C
––– google.com ping statistics –––
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 1.533/1.590/1.693/0.061 ms
ubuntu:/$ traceroute google.com
Command 'traceroute' not found, but can be installed with:
apt install inetutils–traceroute  # version 2:2.5–3ubuntu4.1, or
apt install traceroute            # version 1:2.1.5–1
ubuntu:/$
```

```
ubuntu:/$ sudo apt install traceroute
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  squashfs-tools
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  traceroute
0 upgraded, 1 newly installed, 0 to remove and 42 not upgraded.
Need to get 60.5 kB of archives.
After this operation, 162 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble/universe amd64 traceroute amd64 1:2.1.5-1 [60.5 kB]
Fetched 60.5 kB in 1s (53.0 kB/s)
Selecting previously unselected package traceroute.
(Reading database ... 113825 files and directories currently installed.)
Preparing to unpack .../traceroute_1%3a2.1.5-1_amd64.deb ...
Unpacking traceroute (1:2.1.5-1) ...
Setting up traceroute (1:2.1.5-1) ...
update-alternatives: using /usr/bin/traceroute.db to provide /usr/bin/traceroute (traceroute) in auto mode
update-alternatives: using /usr/bin/traceroute6.db to provide /usr/bin/traceroute6 (traceroute6) in auto mode
update-alternatives: using /usr/bin/lft.db to provide /usr/bin/lft (lft) in auto mode
update-alternatives: using /usr/bin/traceproto.db to provide /usr/bin/traceproto (traceproto) in auto mode
update-alternatives: using /usr/sbin/tcptraceroute.db to provide /usr/sbin/tcptraceroute (tcptraceroute) in auto mode
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu:/$ traceroute google.com
traceroute to google.com (142.250.4.102), 30 hops max, 60 byte packets
 1  172.30.1.1 (172.30.1.1)  0.059 ms  0.028 ms  0.022 ms
 2  10.8.0.1 (10.8.0.1)  0.291 ms  0.277 ms  0.262 ms
 3  100.64.0.1 (100.64.0.1)  0.260 ms  0.311 ms  0.301 ms
 4  10.133.65.103 (10.133.65.103)  0.289 ms  0.278 ms 10.133.65.111 (10.133.65.111)  0.306 ms
 5  10.133.65.100 (10.133.65.100)  0.488 ms 10.133.65.108 (10.133.65.108)  0.516 ms 10.133.65.100 (10.133.65.100)  0.589 ms
 6  10.75.0.80 (10.75.0.80)  0.359 ms 10.75.0.92 (10.75.0.92)  0.479 ms  0.451 ms
 7  10.75.248.14 (10.75.248.14)  0.827 ms 10.75.248.16 (10.75.248.16)  0.813 ms  0.793 ms
 8  sin-gss1-sbb1-nc5.sgp.asia (103.5.15.16)  3.011 ms sin-sg1-sbb1-nc5.sgp.asia (103.5.15.4)  3.001 ms sin-gss1-sbb1-nc5.sgp.asia (103.5.15.16)  2.984 ms
 9  10.200.0.198 (10.200.0.198)  0.979 ms  1.268 ms  1.324 ms
10  * * *
11  * * *
12  142.251.52.48 (142.251.52.48)  1.707 ms 142.251.240.254 (142.251.240.254)  1.698 ms 209.85.244.156 (209.85.244.156)  1.072 ms
13  142.251.192.10 (142.251.192.10)  1.891 ms 142.251.192.8 (142.251.192.8)  1.637 ms 72.14.233.134 (72.14.233.134)  1.023 ms
14  216.239.50.55 (216.239.50.55)  3.605 ms 216.239.40.197 (216.239.40.197)  2.771 ms 142.251.229.225 (142.251.229.225)  1.552 ms
15  142.251.229.228 (142.251.229.228)  1.458 ms 216.239.56.38 (216.239.56.38)  1.478 ms 142.251.230.228 (142.251.230.228)  1.694 ms
```

```
ubuntu:/$ ss -tulpn
Netid  State    Recv-Q  Send-Q   Local Address:Port                   Peer Address:Port   Process
udp    UNCONN   0       0              127.0.0.54:53                        0.0.0.0:*       users:(("systemd-resolve",pid=1189,fd=16))
udp    UNCONN   0       0          127.0.0.53%lo:53                         0.0.0.0:*       users:(("systemd-resolve",pid=1189,fd=14))
udp    UNCONN   0       0              172.30.1.2:68                        0.0.0.0:*       users:(("dhcpcd",pid=1136,fd=7))
udp    UNCONN   0       0         172.30.1.2%enp1s0:68                      0.0.0.0:*       users:(("systemd-network",pid=458,fd=21))
udp    UNCONN   0       0       [fe80::4444:4937:3da4:6712]%enp1s0:546         [::]:*       users:(("dhcpcd",pid=1050,fd=7))
tcp    LISTEN   0       4096       127.0.0.53%lo:53                         0.0.0.0:*       users:(("systemd-resolve",pid=1189,fd=15))
tcp    LISTEN   0       4096           127.0.0.1:44793                      0.0.0.0:*       users:(("containerd",pid=628,fd=9))
tcp    LISTEN   0       511              0.0.0.0:40205                      0.0.0.0:*       users:(("node",pid=1225,fd=18))
tcp    LISTEN   0       128              0.0.0.0:40200                      0.0.0.0:*       users:(("kc-terminal",pid=1274,fd=12))
tcp    LISTEN   0       4096             0.0.0.0:22                         0.0.0.0:*       users:(("sshd",pid=1192,fd=3),("systemd",pid=1,fd=93))
tcp    LISTEN   0       4096          127.0.0.54:53                         0.0.0.0:*       users:(("systemd-resolve",pid=1189,fd=17))
tcp    LISTEN   0       4096                   *:40305                            *:*       users:(("runtime-info-se",pid=1262,fd=3))
tcp    LISTEN   0       4096                   *:40300                            *:*       users:(("runtime-scenari",pid=1215,fd=3))
tcp    LISTEN   0       4096                [::]:22                           [::]:*       users:(("sshd",pid=1192,fd=4),("systemd",pid=1,fd=94))
ubuntu:/$ dig google.com

; <<>> DiG 9.18.39-0ubuntu0.24.04.2-Ubuntu <<>> google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 15737
;; flags: qr rd ra; QUERY: 1, ANSWER: 6, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;google.com.                    IN      A

;; ANSWER SECTION:
google.com.             157     IN      A       142.251.12.102
google.com.             157     IN      A       142.251.12.138
google.com.             157     IN      A       142.251.12.113
google.com.             157     IN      A       142.251.12.139
google.com.             157     IN      A       142.251.12.100
google.com.             157     IN      A       142.251.12.101

;; Query time: 3 msec
;; SERVER: 8.8.8.8#53(8.8.8.8) (UDP)
;; WHEN: Sun Feb 15 08:07:52 UTC 2026
;; MSG SIZE  rcvd: 135

ubuntu:/$ man curl
ubuntu:/$ curl -i https://google.com
HTTP/2 301
location: https://www.google.com/
content-type: text/html; charset=UTF-8
content-security-policy-report-only: object-src 'none';base-uri 'self';script-src 'nonce-9Ekm45GAOTSDApdlym52pQ' 'strict-dynamic' 'report-sample' 'unsafe-eval' 'unsafe-inline' htt
ps: http:;report-uri https://csp.withgoogle.com/csp/gws/other-hp
reporting-endpoints: default="//www.google.com/httpservice/retry/jserror?ei=W3-Rab-FCaiwwcsPndj62AY&cad=crash&error=Page%20Crash&jsel=1"
date: Sun, 15 Feb 2026 08:10:03 GMT
expires: Tue, 17 Mar 2026 08:10:03 GMT
cache-control: public, max-age=2592000
server: gws
```

```
cache-control: public, max-age=2592000
server: gws
content-length: 220
x-xss-protection: 0
x-frame-options: SAMEORIGIN
alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000

<HTML><HEAD><meta http-equiv="content-type" content="text/html;charset=utf-8">
<TITLE>301 Moved</TITLE></HEAD><BODY>
<H1>301 Moved</H1>
The document has moved
<A HREF="https://www.google.com/">here</A>.
</BODY></HTML>
ubuntu:/$ man curl
ubuntu:/$ netstat -an | head
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
tcp        0      0 127.0.0.53:53          0.0.0.0:*              LISTEN
tcp        0      0 127.0.0.1:44793        0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:40205          0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:40200          0.0.0.0:*              LISTEN
tcp        0      0 0.0.0.0:22             0.0.0.0:*              LISTEN
tcp        0      0 127.0.0.54:53          0.0.0.0:*              LISTEN
tcp        0      0 172.30.1.2:40205       10.244.4.158:42226     ESTABLISHED
tcp        0      0 172.30.1.2:40200       10.244.4.187:36128     ESTABLISHED
ubuntu:/$
```

Mini Task: Port Probe & Interpret

1. Identify one listening port from `ss -tulpn` (e.g., SSH on 22 or a local web app).
2. From the same machine, test it: `nc -zv localhost <port>` (or `curl -I http://localhost:<port>`).
3. Write one line: is it reachable? If not, what's the next check? (e.g., service status, firewall).

```
ubuntu:/$ nc -zv localhost 22
Connection to localhost (127.0.0.1) 22 port [tcp/ssh] succeeded!
ubuntu:/$
ubuntu:/$
```