CprE 489

Lab 1 Report

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In this lab, we learned some very basic but useful Linux networking commands: ping, hping2, nslookup, host, ifconfig, iperf, traceroute, tcptraceroute, nc, and route.

Ping and hping2 can be used to message a server with an ICMP packet to get a response, and see if the server is up as well as the average round time of the packet. If the server blokcs ICMP, hping2 can send TCP, UDP, and RAW-IP packets as well so that we can still check if the server is up. Nslookup is used to find the IP address of a given hostname by default, and supports many different query types, including the host's CPU and OS type, mail exchanger, and supported well-known services. Host is a simpler version of nslookup, and converts names to IP and vice-versa and lists the aliases of the given host.

For configuring and displaying the network's interface parameters, there's ifconfig. It lists all of the different network gateways such as wlan, lo, and eth0, as well as their IP addresses and other vital information.

Iperf measures bandwidth between the localhost and a given host. Traceroute and tcptraceroute determine the physical, geographical path that the packet takes during its trip. Netcat is a simple utility that creates a TCP connection with the given host and reads/writes to it. Finally, route gives the routing table for the local machine.

1. iastate: 3.692ms, cam: 118.32ms, lenovo: 331.97ms

2. More packets are lost

3. iastate: 129.186.23.166

microsoft: 23.197.21.117, alias: [www.microsoft.com-c.edgekey.net](http://www.microsoft.com-c.edgekey.net/)

akadns: 64.4.11.42, alias: [www.ms.akadns.net](http://www.ms.akadns.net/)

4. 10 vulcan.ece.iastate.edu

5. spock.ee.iastate.edu

6. engineering: 129.186.239.13

google: 216.58.217.4

7. [www.facebook.com](http://www.facebook.com/)was the first machine I could find with an alias: star-mini.c10r.facebook.com

8. em1: 192.168.254.6

9. The bandwidth is 935Mbits/sec. It's nearly 1Gb/s which makes sense since the computers are connected locally via ethernet.

10. Traceroute gives 9 hops, 6 of which are inside the iastate network. 30 hops max, 60 byte packages. The longest hop takes 43ms.

11. 1-6: ISU; Ames, IA

7. WiscNet NIC; Madison, WI

8. AMS-IX US Inc; Wilmington, DE

9. Akamai Technologies, Inc; Cambridge, MA

12. Many more hops to get to Australia (obviously). Longest hop 209ms (trans-oceanic).

0. My router; Ames, IA

1. ICS Advanced Technologies; Ames, IA

2. ICS Advanced Technologies; Ames, IA

3. Internet Assigned Numbers Authority; Los Angeles, CA

4. BroadNet Connect; Des Moines, IA

5. Hurricane Electric, Inc; Fremont, CA

6. Hurricane Electric, Inc; Fremont, CA

7. Hurricane Electric, Inc; Fremont, CA

8. Seattle Internet Exchange, Inc; Seattle, WA

9. Australian Academic and Research Network; Canberra, AU

10. Australian Academic and Research Network; Canberra, AU

11. Australian Academic and Research Network; Canberra, AU

12. University of Newcastle – Callaghan campus; Callaghan, AU

13. University of Newcastle – Callaghan campus; Callaghan, AU

14. University of Newcastle – Callaghan campus; Callaghan, AU (destination)

13. tcptraceroute includes the total round trip time of the last packet.

14. YES!

15. Output: OK Fine. Be that way.