

## Homework 1

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### 1. ping另外一台计算机

这里使用阿里默认DNS服务器ip (223.5.5.5)

```
1. zsh@zhaoshihandeMacBook-Pro: ~ (zsh)

λ zsh [~] → ping 223.5.5.5
PING 223.5.5.5 (223.5.5.5): 56 data bytes
64 bytes from 223.5.5.5: icmp_seq=0 ttl=47 time=21.600 ms
64 bytes from 223.5.5.5: icmp_seq=1 ttl=47 time=27.001 ms
64 bytes from 223.5.5.5: icmp_seq=2 ttl=47 time=21.904 ms
64 bytes from 223.5.5.5: icmp_seq=3 ttl=47 time=31.116 ms
64 bytes from 223.5.5.5: icmp_seq=4 ttl=47 time=21.543 ms
64 bytes from 223.5.5.5: icmp_seq=5 ttl=47 time=28.994 ms
64 bytes from 223.5.5.5: icmp_seq=6 ttl=47 time=21.425 ms
^C
--- 223.5.5.5 ping statistics ---
7 packets transmitted, 7 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 21.425/24.798/31.116/3.835 ms

λ zsh [~] →
```

### 2. traceroute一个服务器

这里使用OpenDNS服务器, IP地址为208.67.222.222

```
1. zsh@zhaoshihandeMacBook-Pro: ~ (zsh)

λ zsh [~] → traceroute 208.67.222.222
traceroute to 208.67.222.222 (208.67.222.222), 64 hops max, 52 byte packets
 1 * * 10.132.127.254 (10.132.127.254) 0.866 ms
 2 * * *
 3 172.20.255.254 (172.20.255.254) 1.600 ms 1.454 ms 1.460 ms
 4 172.17.11.214 (172.17.11.214) 0.525 ms 0.508 ms 0.471 ms
 5 172.17.11.254 (172.17.11.254) 1.484 ms 1.289 ms 1.265 ms
 6 218.197.158.254 (218.197.158.254) 1.344 ms 1.318 ms 1.318 ms
 7 wh0.cernet.net (202.112.53.81) 1.984 ms 2.330 ms 1.685 ms
 8 101.4.114.229 (101.4.114.229) 0.850 ms 15.064 ms 0.813 ms
 9 101.4.117.38 (101.4.117.38) 10.960 ms 14.079 ms 15.915 ms
10 101.4.112.1 (101.4.112.1) 23.414 ms 19.208 ms 19.337 ms
11 101.4.113.109 (101.4.113.109) 19.504 ms 19.416 ms 19.382 ms
12 101.4.114.170 (101.4.114.170) 21.595 ms
   101.4.114.194 (101.4.114.194) 21.131 ms
   101.4.114.174 (101.4.114.174) 22.094 ms
13 101.4.117.98 (101.4.117.98) 23.368 ms 24.026 ms 24.011 ms
14 101.4.117.170 (101.4.117.170) 229.653 ms * 239.747 ms
15 te0-10-0-22.ccr41.lax04.atlas.cogentco.com (38.88.196.185) 260.386 ms 265.615 ms 255.790 ms
16 * * *
17 4.69.153.117 (4.69.153.117) 286.455 ms
   4.69.153.121 (4.69.153.121) 291.906 ms
   4.69.153.117 (4.69.153.117) 253.307 ms
18 4.53.230.98 (4.53.230.98) 276.840 ms 268.913 ms 273.673 ms
19 * * *
20 * * *
21 * * *
22 * * *
23 * * *
24 * * *
25 * * *
```

### 3. 课本习题

#### R8. What are some of the physical media that Ethernet can run over?

Answer:

Few physical media where Ethernet can run.

1. Twisted pair cable—Now two basic type of twisted pair cable exist Unshielded twisted pair(UTP) and

Shielded twisted pair(STP)

Few feature of UTP cable

- Speed and throughput— 10 to 1000 Mbps
- Average cost per node— Least expensive
- Media and connector size – Lsmall
- Maximum cable length— 100 m (short) Shielded twisted pair (STP)

Few feature of STP cable

- Speed and throughput— 10 to 100 Mbps
- Average cost per node— Moderately expensive
- Media and connector size – Medium to large
- Maximum cable length— 100 m(short)

2. Coaxial cable

Few feature of coaxial cable

- Speed and throughput— 10 to 100 Mbps
- Average cost per node— Inexpensive
- Media and connector size – Medium
- Maximum cable length— 500 m(medium)

3. Fiber optic

Feature of Fiber optic

- Very high bandwidth

Fiber optic cable can be used in environments that make wire cables unusable

No radio frequency emissions; signals of fiber optic cable can not interfere with nearby electronic devices and can not be detected by conventional electronic eavesdropping techniques.

Speed and throughput— 100 Mbps to 100 Gbps(single mode) 100 Mbps to 9.92 Gbps(multimode)

- Fiber optic is expensive.
- Can not be tapped so better security
- Can be used over great distances

#### R2. Describe the protocol that might be used by two people having a telephonic conversation to initiate and end the conversation.

Answer:

From Wikipedia: Diplomatic protocol is commonly described as a set of international courtesy rules. These well-established and time-honored rules have made it easier for nations and people to live and work together. Part of protocol has always been the acknowledgment of the hierarchical standing of all present. Protocol rules are based on the principles of civility.

#### R10. Describe the different wireless technologies you use during the day and their characteristics. If you have a choice between multiple technologies, why do you prefer one over another?

Answer:

There are two popular wireless Internet access technologies today:

- a) Wifi (802.11) In a wireless LAN, wireless users transmit/receive packets to/from an base station (i.e., wireless access point) within a radius of few tens of meters. The base station is typically connected to the wired Internet and thus serves to connect wireless users to the wired network.
- b) 3G and 4G wide-area wireless access networks. In these systems, packets are transmitted over the same wireless infrastructure used for cellular telephony, with the base station thus being managed by a telecommunications provider. This provides wireless access to users within a radius of tens of kilometers of the base station.

From my perspective, I would like to choose the 4G wide-area wireless because it is more faster than Wifi. In many occasions, using unauthorized Wifi in the public might cause some serious vulnerabilities about our information security. But we don't have the problem in 4G network.

