A very brief introduction to Networking

Topics

- Hardware Server

- Software Server

- Software Client

- IP address

- Port number

- DNS address

- DNS Server

- Router

So how do I run a server?

- Protocols: http, https, ssh/sftp/scp

Server

- Hardware Server
  - the physical computer you connect to

- Software Server
  - the software application you connect to
  - on the hardware server

- Client
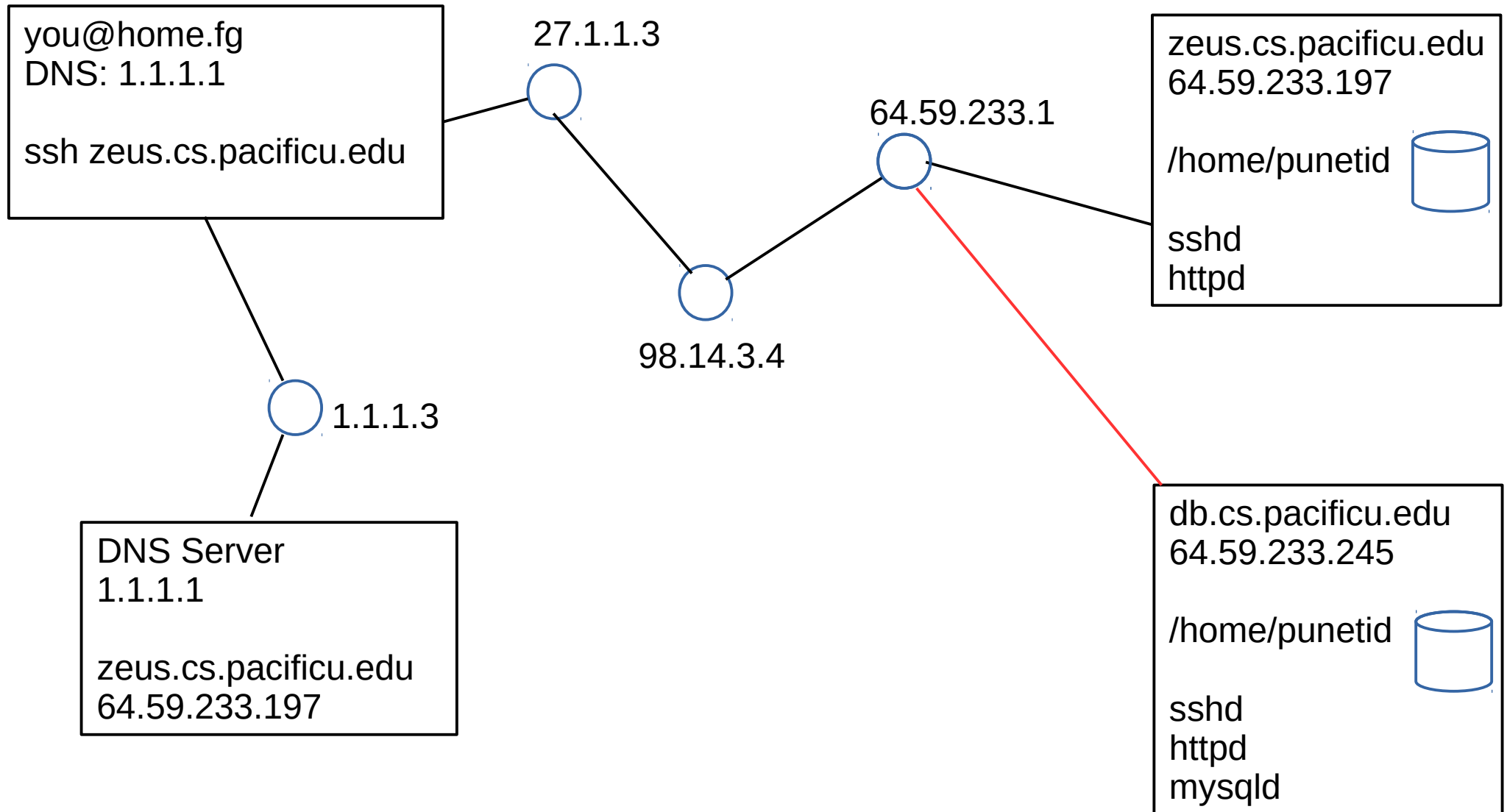 - software application that connects to the server

Addresses

- IP address
  - IPv4: `###.###.###.###` (range 0-255)
  - IPv6: 12a4:12c4:1e34:1f34:1a34:1d34:1b34:123b
  - each machine on the internet must have an IP address.
- DNS address
  - human readable address
- DNS Server
  - translates the human readable address to IP address

Connections

- Client → Server

- Client needs:
  - IP Address, Port, Protocol

  - Port:

  - Protocol:
  - Firewall:

Make a Connection

you@home.fg
DNS: 1.1.1.1

ssh zeus.cs.pacificu.edu

27.1.1.3

64.59.233.1

98.14.3.4

1.1.1.3

DNS Server
1.1.1.1

zeus.cs.pacificu.edu
64.59.233.197

zeus.cs.pacificu.edu
64.59.233.197

/home/punetid

sshd
httpd

db.cs.pacificu.edu
64.59.233.245

/home/punetid

sshd
httpd
mysqld

ssh tunnel

`ssh -L ``3306``:``64.59.233.245:3306`` chadd@zeus.cs.pacificu.edu`

localhost
target machine (database behind a firewall)
gateway/bridge

cs.pacificu.edu

zeus.cs.pacificu.edu
64.59.233.197

/home/punetid

sshd
httpd

ada.cs.pacificu.edu
64.59.233.195

/home/punetid

sshd
ldapd

grace.cs.pacificu.edu
64.59.233.200

\\Students\

AD
DNS

db.cs.pacificu.edu
64.59.233.245

/home/punetid

sshd
httpd
mysqld

maude.cs.pacificu.edu (Lab)
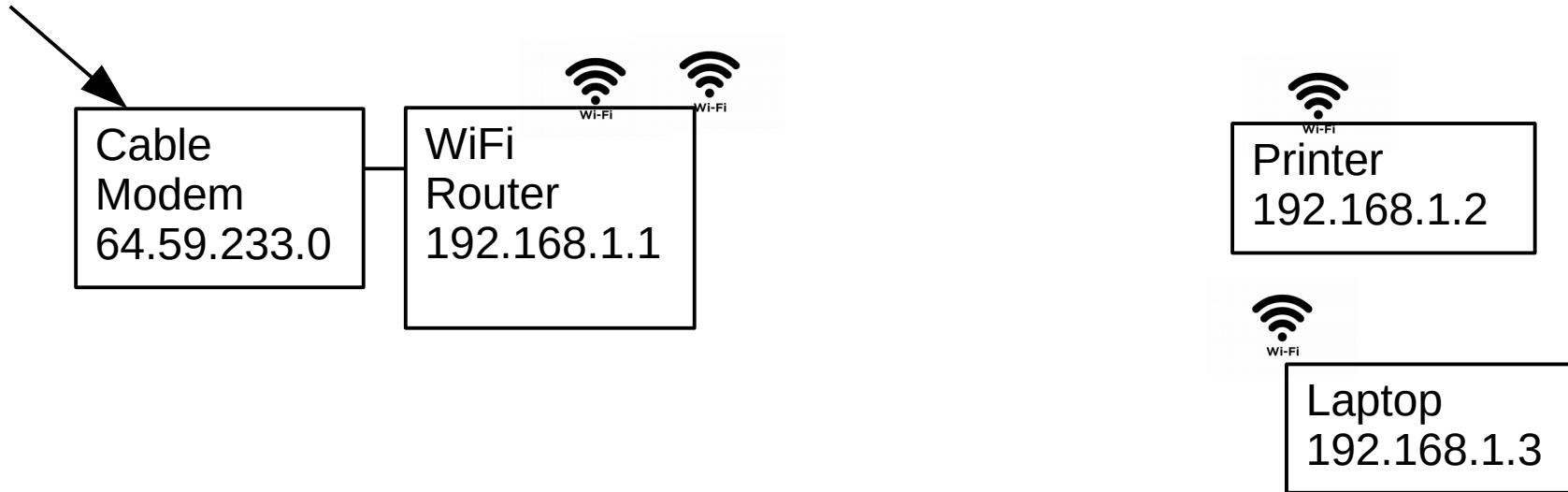64.59.233.225

/home/punetid

sshd
httpd

So how do I run a server?

https://indieweb.org/Getting_Started
https://www.digitalocean.com/products/one-click-apps/lamp/
https://education.github.com/pack

A home network

Cable
Modem
64.59.233.0

WiFi
Router
192.168.1.1

Printer
192.168.1.2

Laptop
192.168.1.3

NAT
DHCP