

Matt Might
University of Utah
matt.might.net

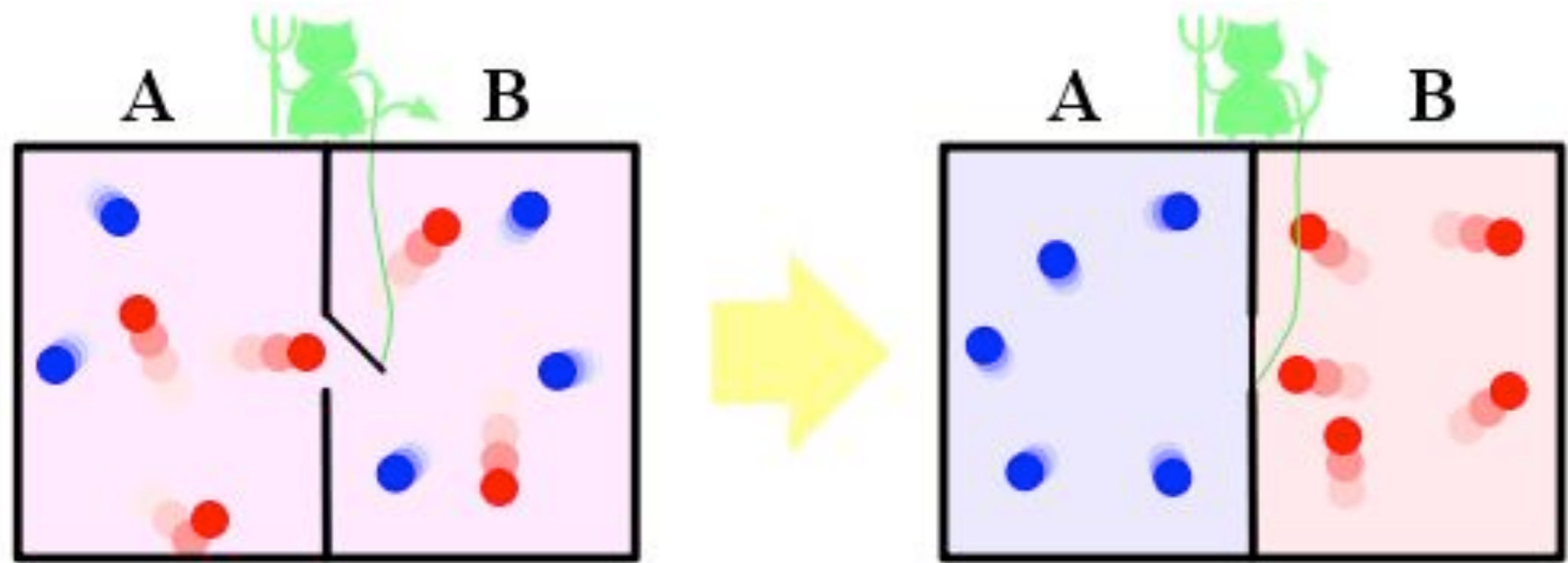


Daemons

Daemons? Huh?

Scripts are daemon glue.

δαίμων

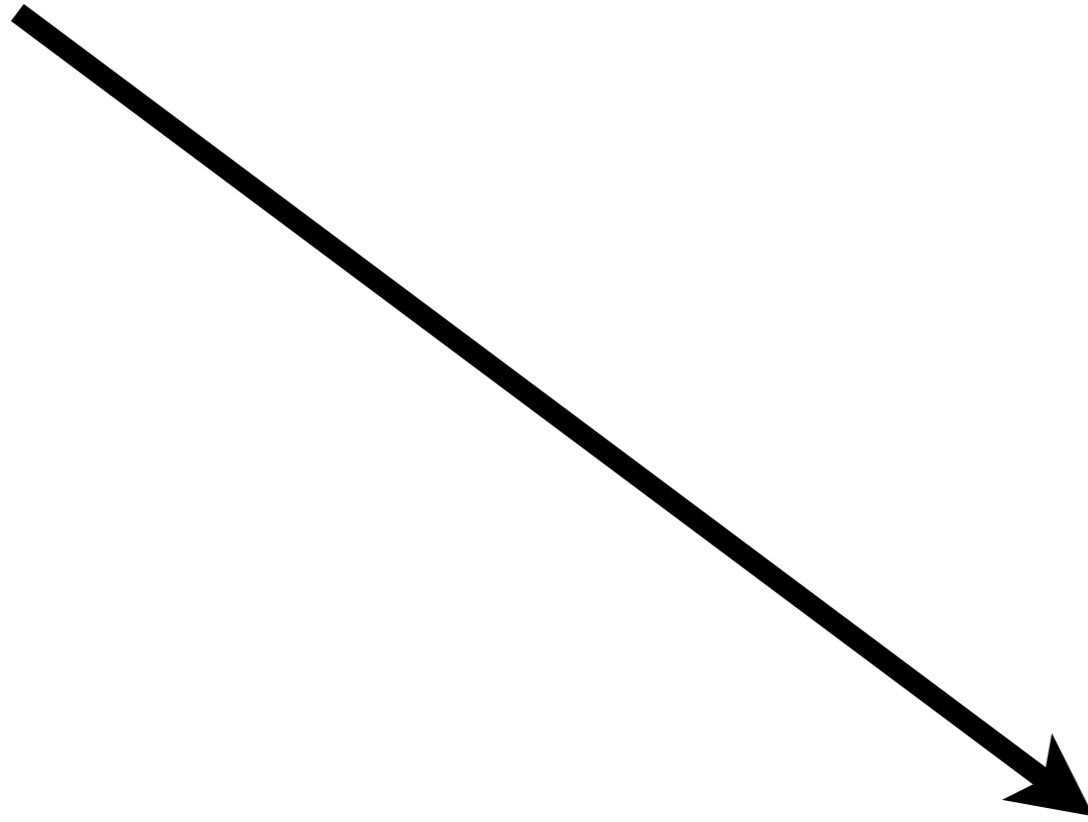


**Design lessons:
Horrible config files!**

- Secure Shell (sshd)
- DNS (BIND9, djbdns)
- HTTP (apache, nginx, nodejs)
- SQL (mysql, postgresql)
- IRC (Bahamut, ircd-seven)
- SMTP (exim)

http

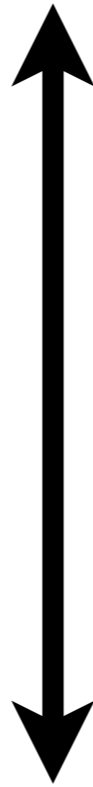
http



smtp

http

http

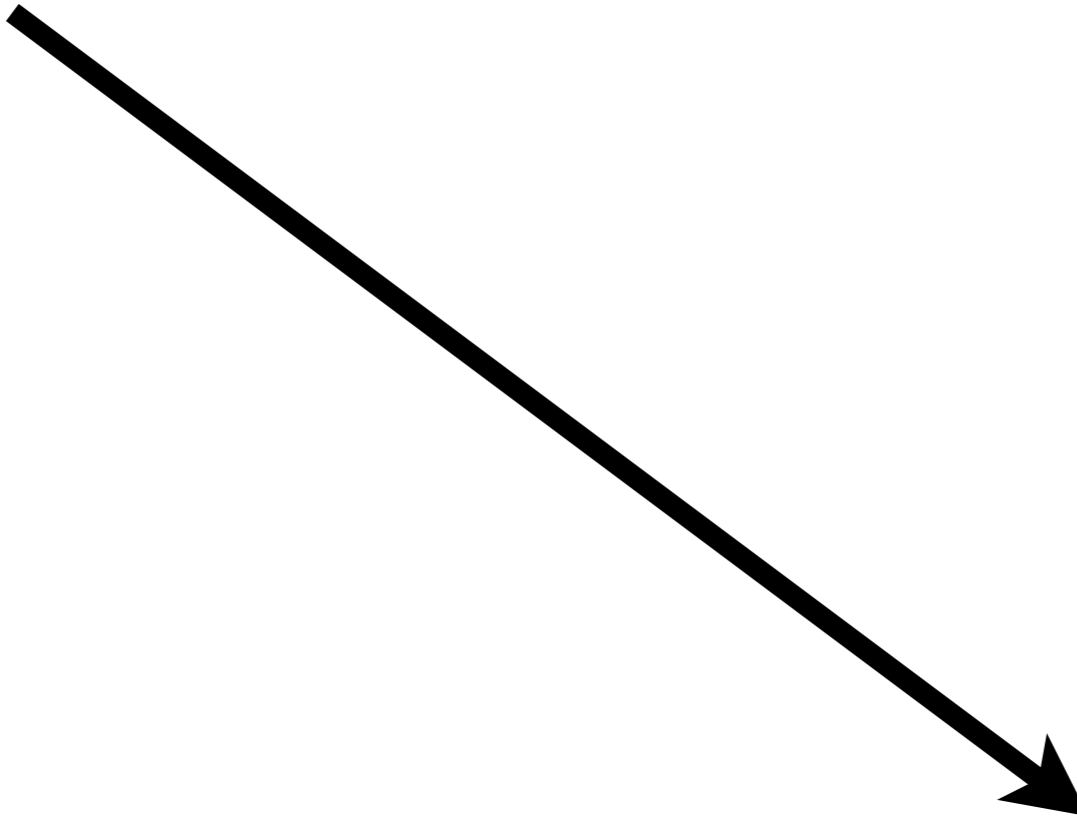


sql

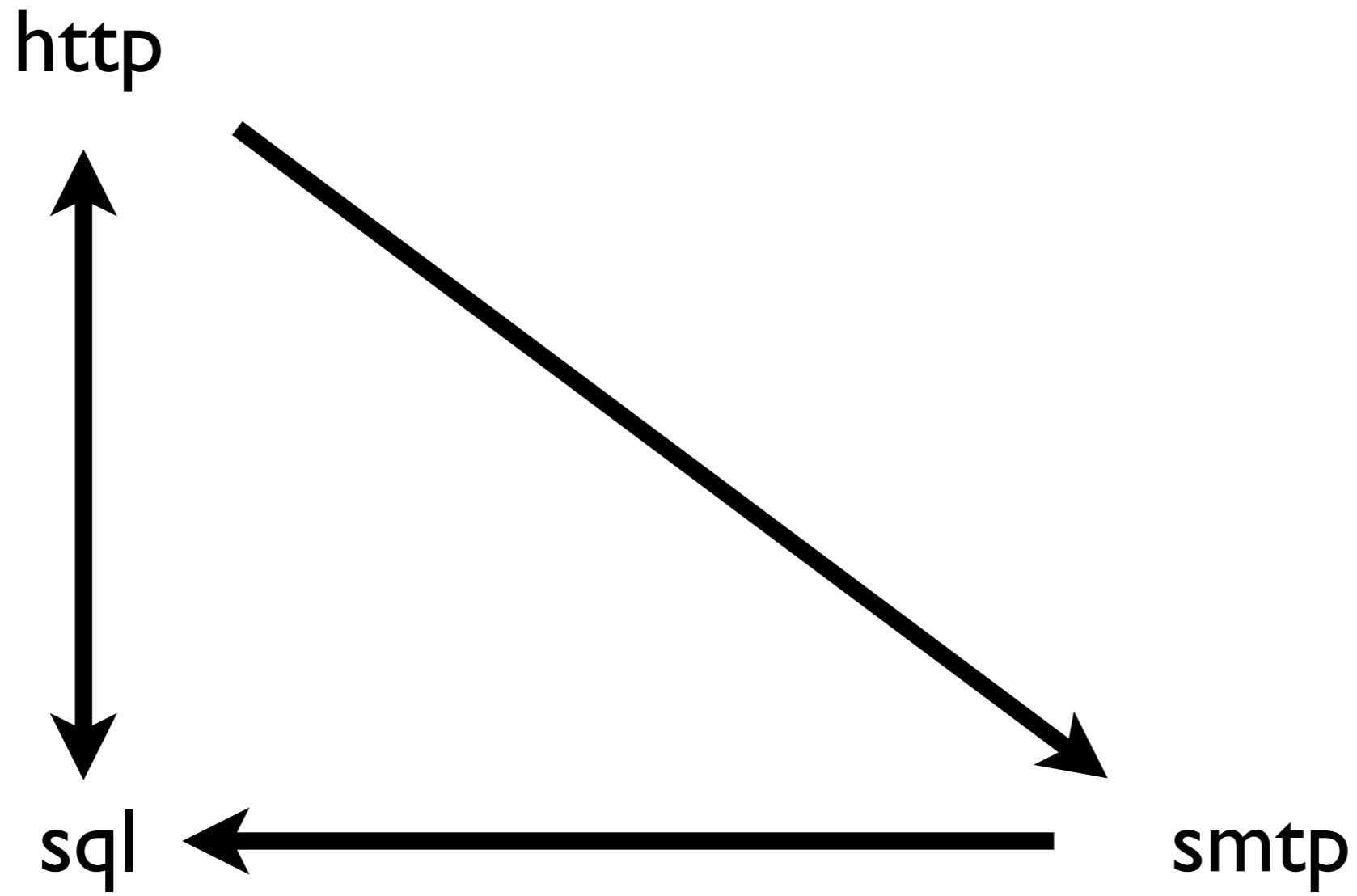
http



sql



smtp



ssh and sshd

A



B

```
ssh user@host
```

```
ssh user@host cmd
```

SSH keys

```
$ ssh-keygen -t dsa
```

```
$ ls ~/ .ssh
```

```
id_dsa.pub
```

```
id_dsa
```

$$y = E(x, key)$$

$$x = D(y, key)$$

$$y = E(x, id_dsa)$$

$$x = D(y, id_dsa.pub)$$

`ssh host`

`hi`

`x = rand()`

`y = E(x, id_dsa)`

`x`

`y`

`x' = D(y, id_dsa.pub)`

`x' == x?`

$(pub, pri) = \text{keygen}()$

pub

$k = \text{rand}()$

$k' = E(k, pub)$

x

$k = D(x, pri)$

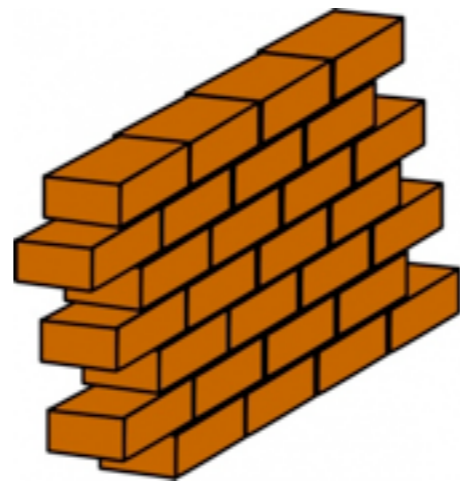
SSH tricks

```
cat file | ssh -e none host cat > file
```

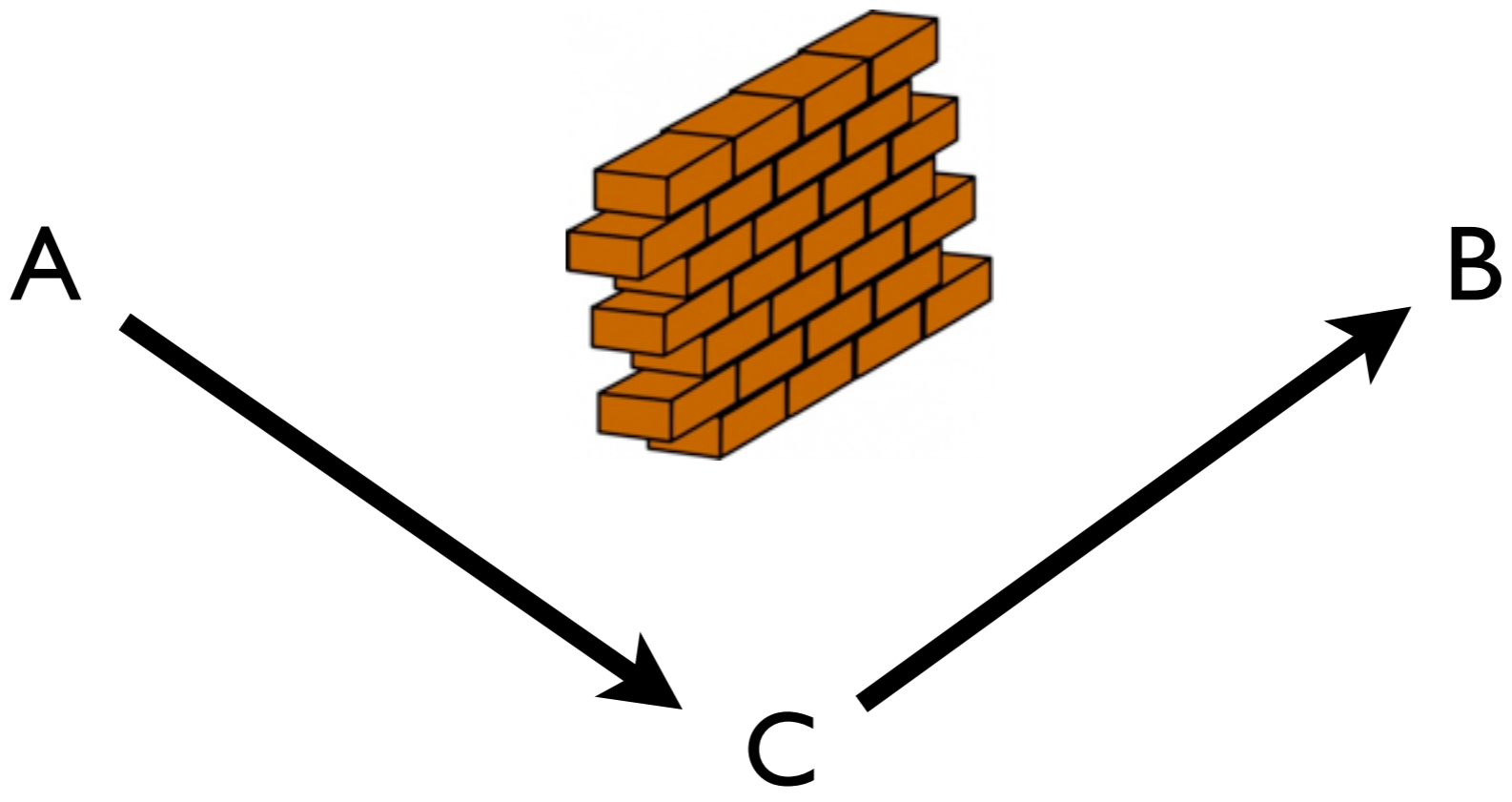
```
cat file | ssh -e none host 'cat > file'
```

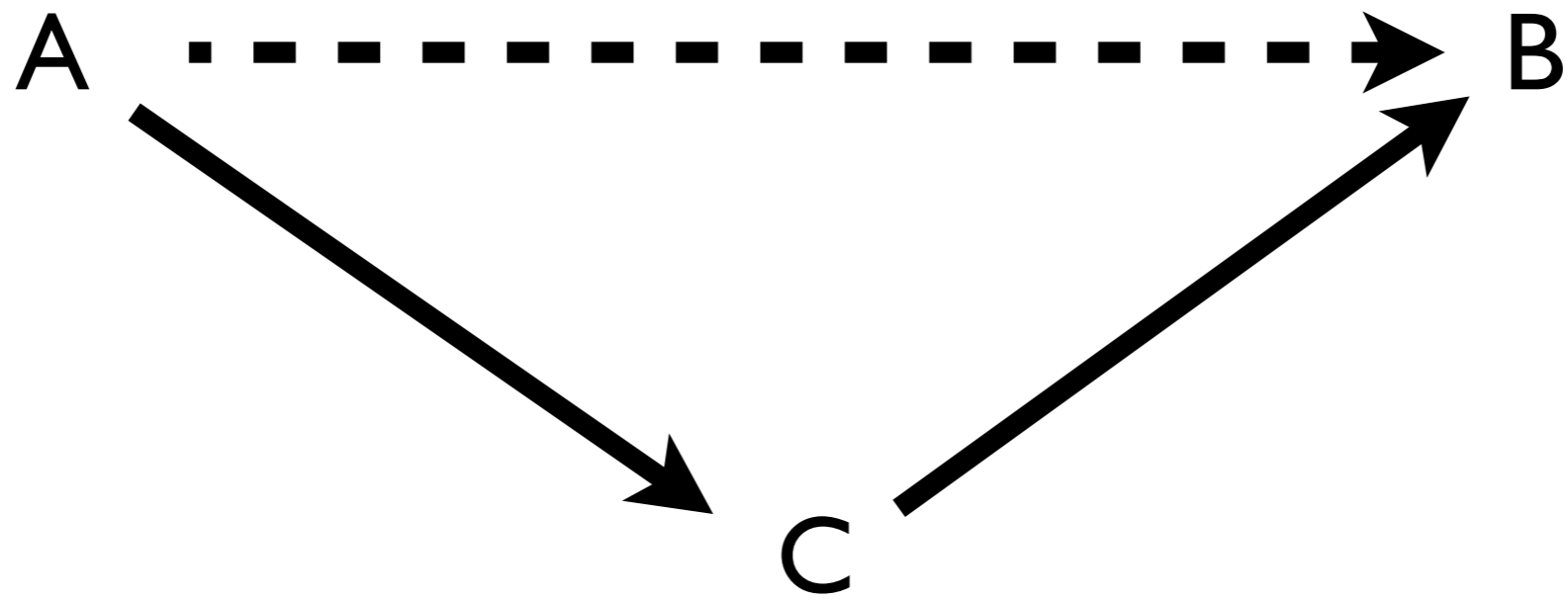
```
dd if=/dev/dsp | ssh -C host dd of=/dev/dsp
```

A

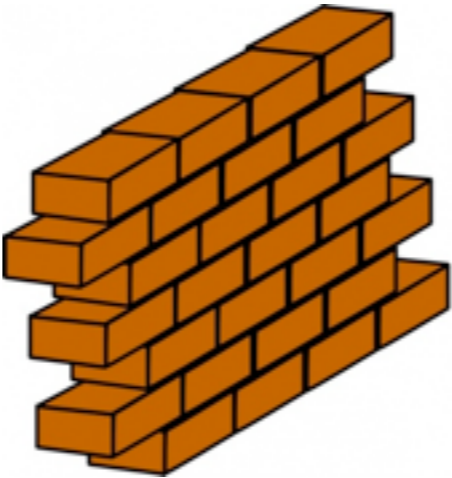


B





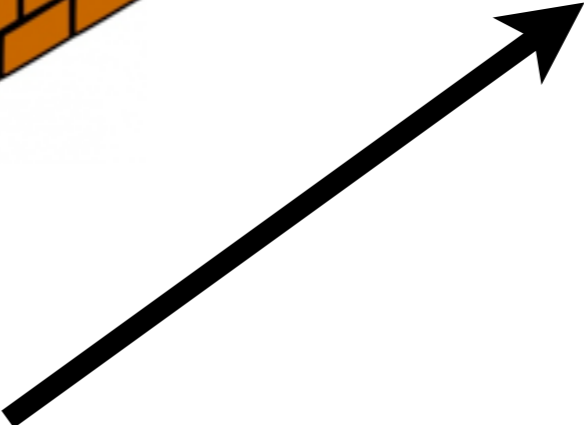
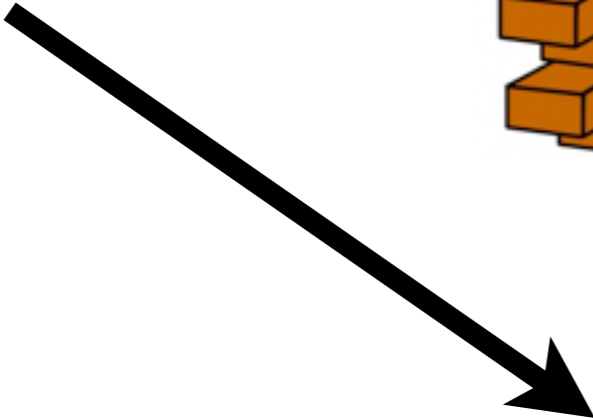
ignorant firewall



you

reddit

home



```
A$ ssh C -L localport:B:remoteport
```

`http://localhost:localport/`

```
A$ ssh C -L localhost:B:remoteport -g
```

```
A$ ssh home -L 80:reddit.com:80
```

```
$ cat /etc/hosts
```

```
127.0.0.1 reddit.com www.reddit.com
```

```
~/ .ssh/config
```

```
Host my-server.com
User admin
IdentityFile ~/.ssh/admin.id_dsa
BatchMode yes
EscapeChar none
```

```
Host mm
User matt
HostName might.net
IdentityFile ~/.ssh/matt.id_dsa
```

```
Host *.lab.ucaprica.edu
User u8193
```

DNS

`www.example.com`

68.12.33.124

DNS

THANK YOU MARIO!

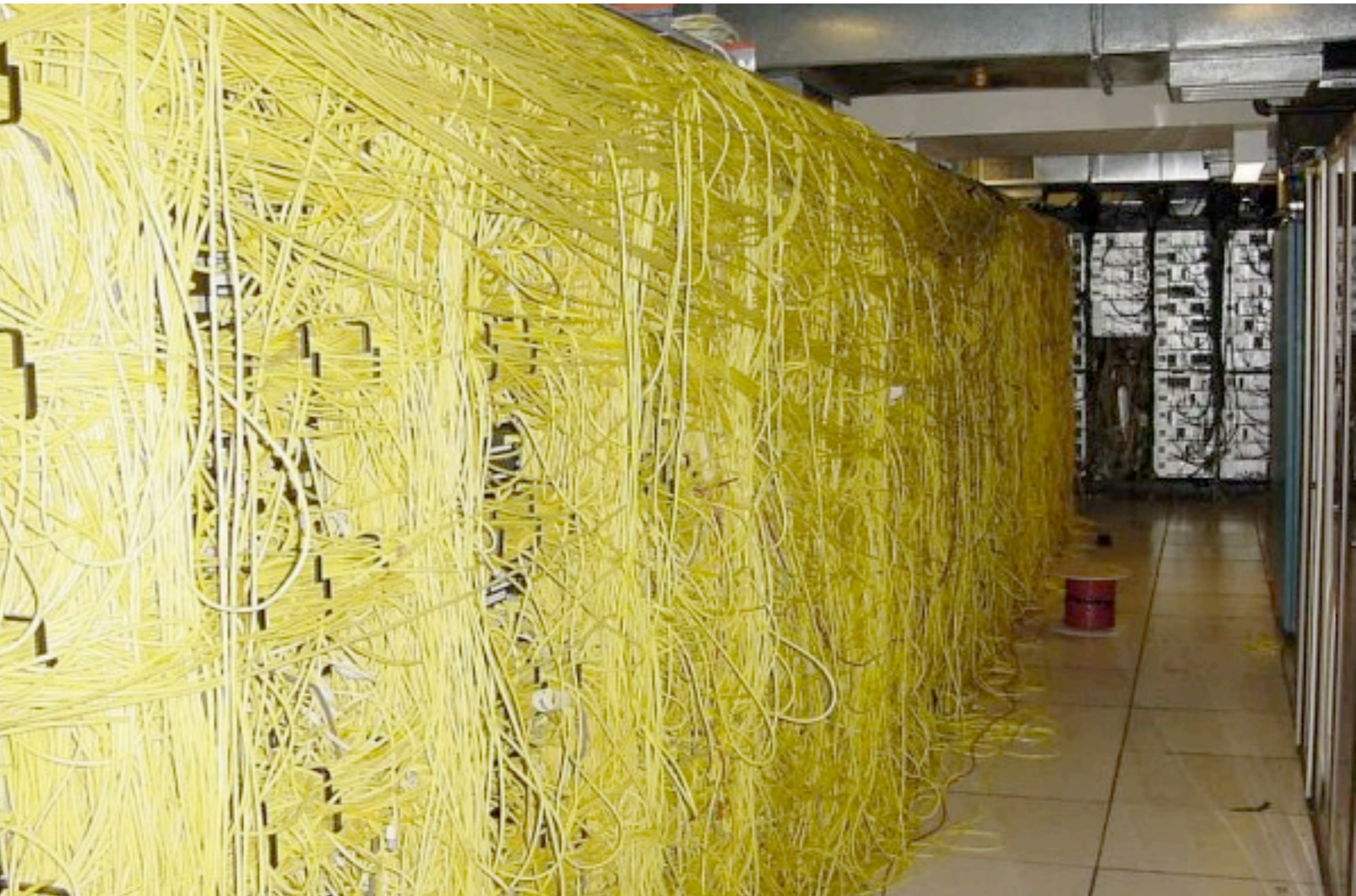
BUT OUR IP ADDRESS IS IN
ANOTHER CASTLE!



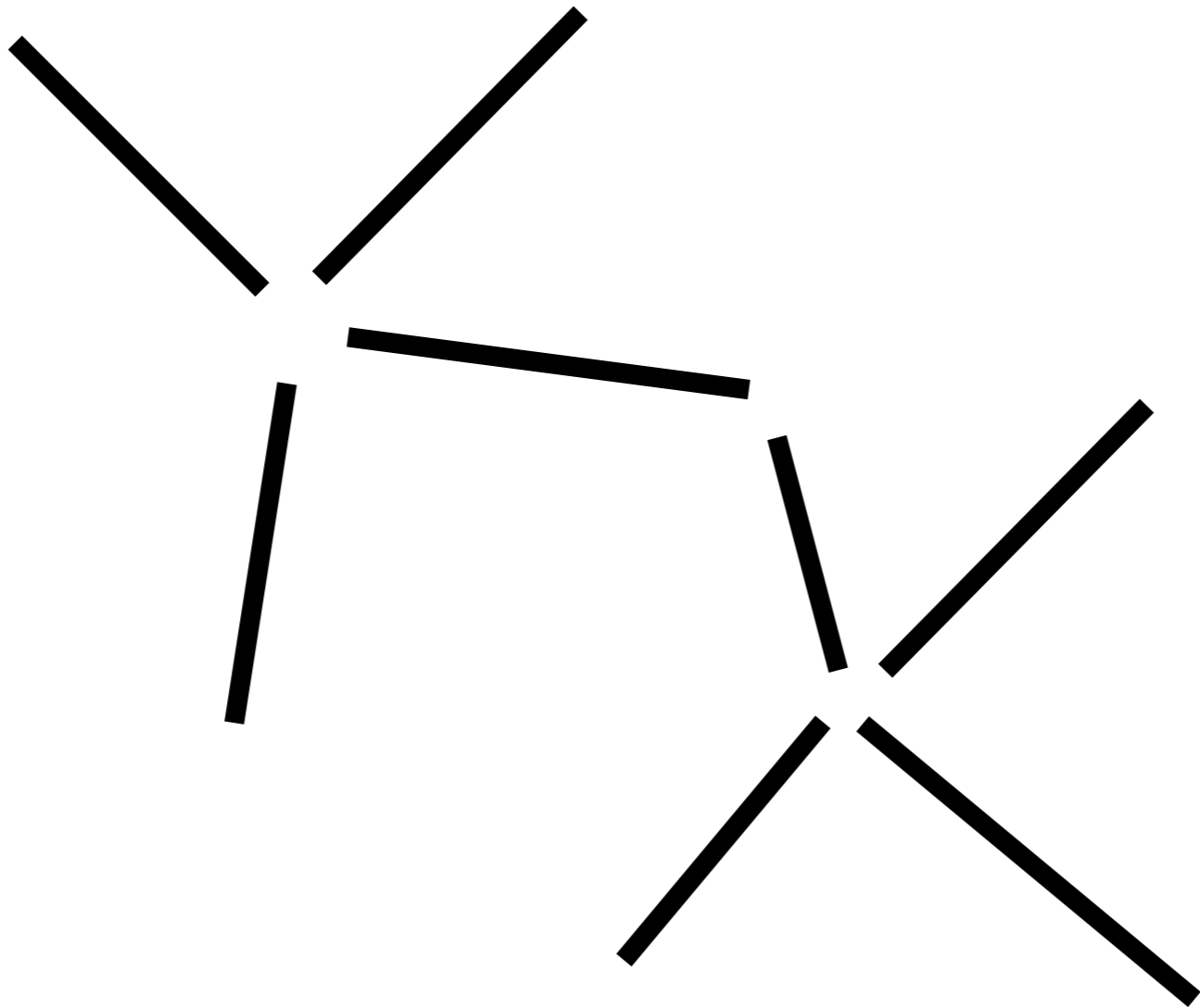
winterfell.ucombinator.org

```
dig winterfell.ucombinator.org +trace
```

a.root-servers.net?



198.41.0.4



198.41.0.4

BIND9

`/etc/bind/named.conf`

```
zone "ucombinator.org" {  
    type master ;  
    file "/etc/bind/zones/ucombinator.org.db" ;  
};
```

zone files

\$ORIGIN ucombinator.org.

\$TTL *seconds*

`$INCLUDE file`

host IN *type* *params*

```
@      IN      SOA      primary-name-server email (  
                        serial-number ; YYYYMMDDnn  
                        time-to-refresh  
                        time-to-retry  
                        time-to-expire  
                        minimum-TTL )
```

host IN A *IP-address*

alias IN CNAME *hostname*

host IN MX *hostname*

host IN NS *hostname*

/etc/bind/zone/ucombinator.org.db

`rndc reload zone`

`matt.winterfell.ucombinator.org`

HTTP

apache: feature-rich

lighttpd, nginx: fast

apache 2.2

`/etc/apache2`

```
$ ls /etc/apache2/  
httpd.conf  
apache2.conf  
conf.d/  
mods-available/  
mods-enabled/  
sites-available/  
sites-enabled/
```

userdir

auth*

cgi

dav, dav_fs

php5

alias

rewrite

proxy*

<VirtualHost>