417

- subnets

Problem:

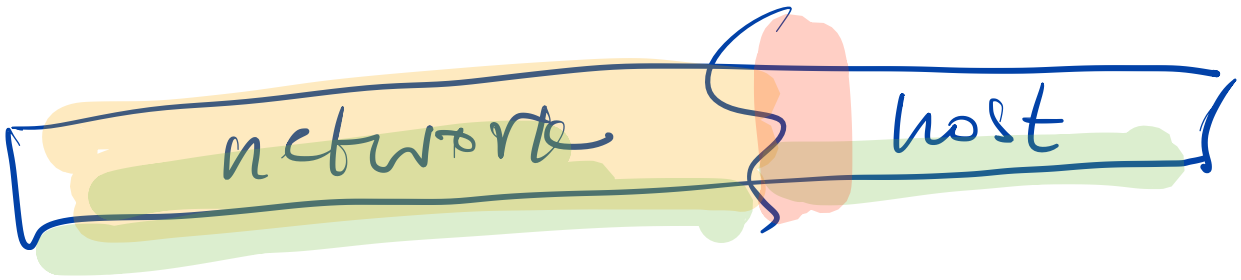
IP networks, no matter how 'large', were a 'single wire' b/c domain

Solutions?

-

-

Classic IP (RFC 791)



with subnets:

- can create 'sub-networks' within an IP network

- subnets not "visible" outside "containing" IP network

new concept / entity

subnet mask

(32 bits in v4)

IP address ∧ subnet mask

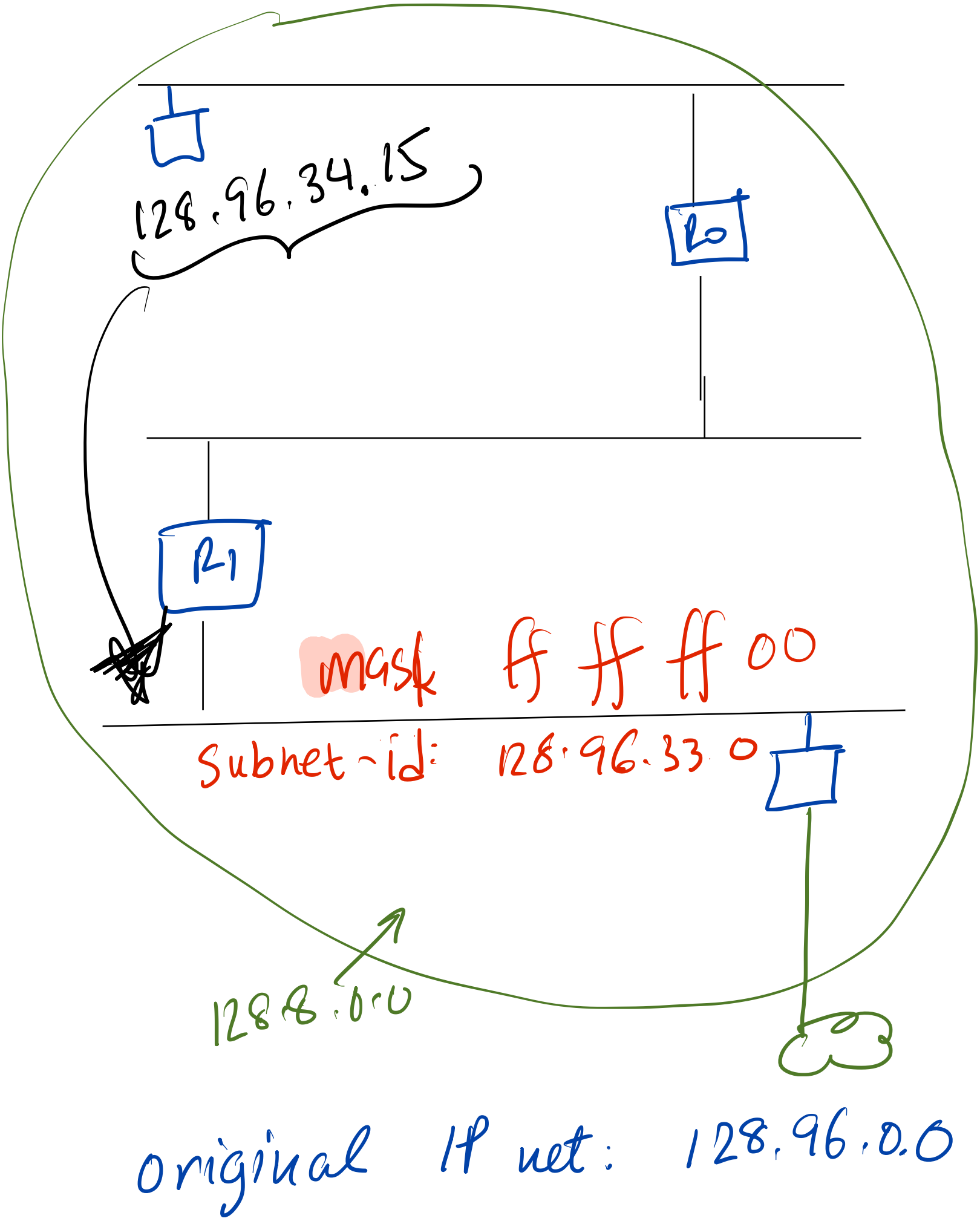
bitwise AND

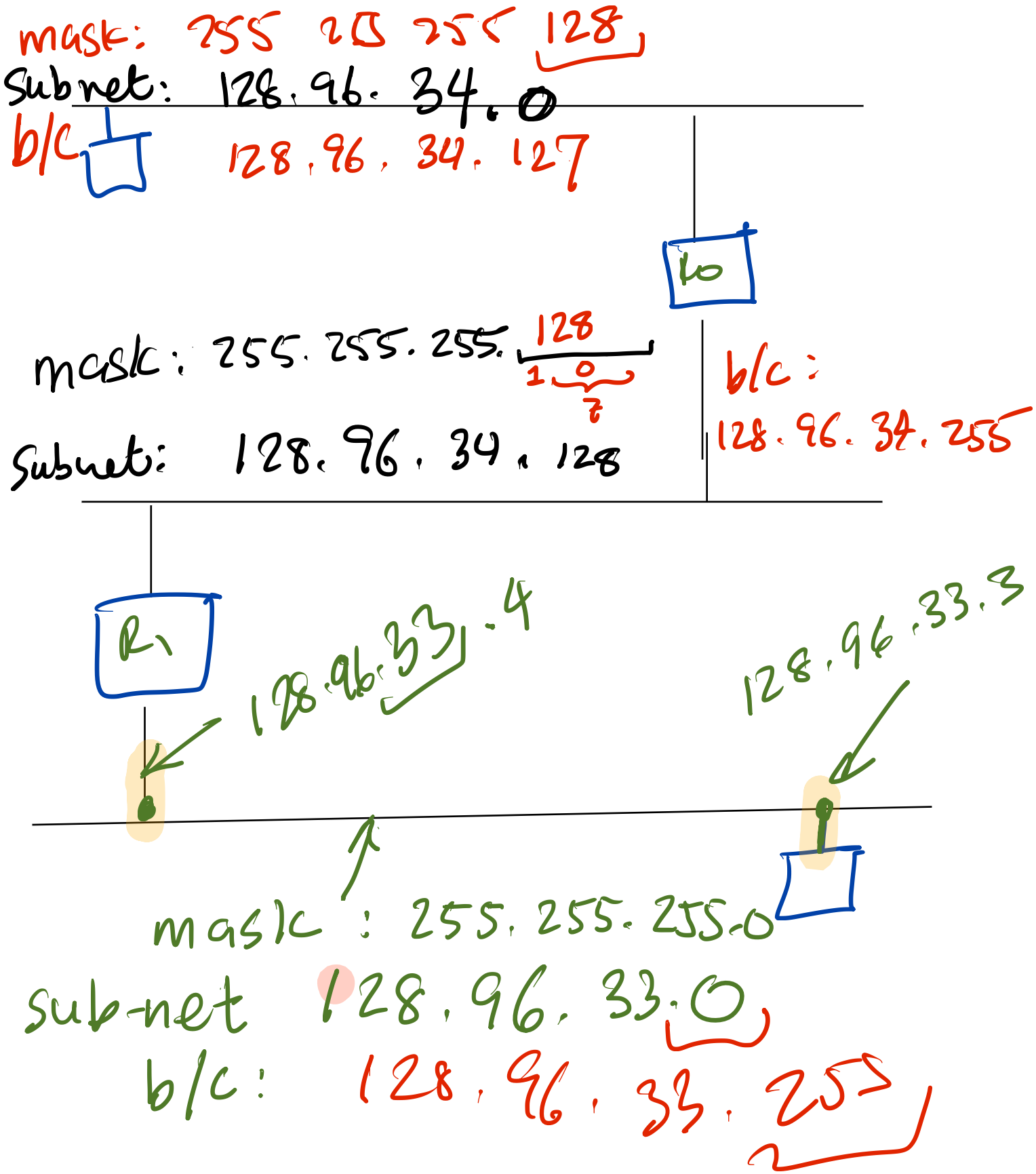
→ subnet-id

mask usually written as dotted quad

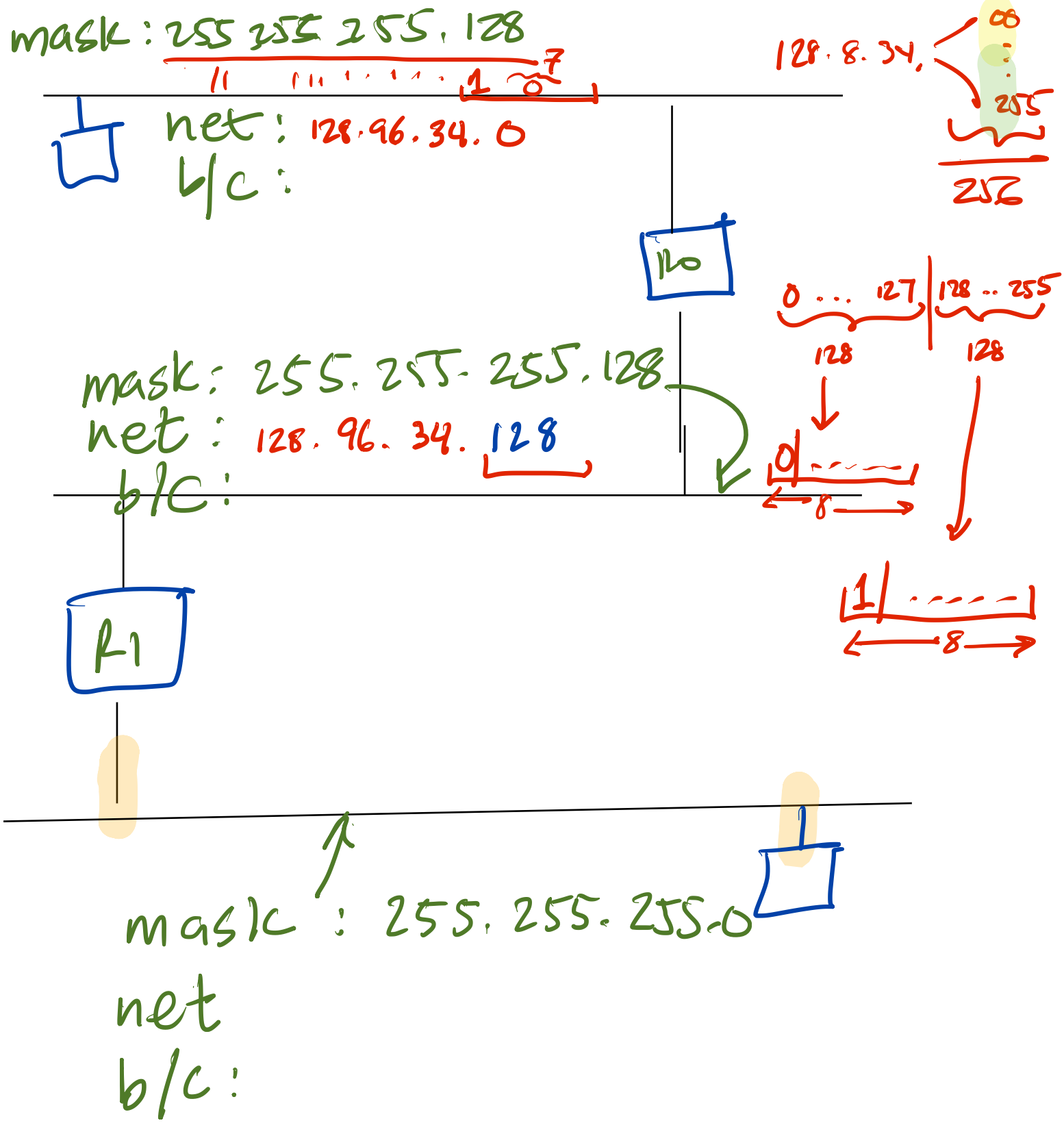
(255.255.0.0)

or in hex ff ff 00 00


128.96.34.15
R0
R1
mask ff ff ff 00
Subnet-id: 128.96.33.0
128.8.0.0
original IP net: 128.96.0.0

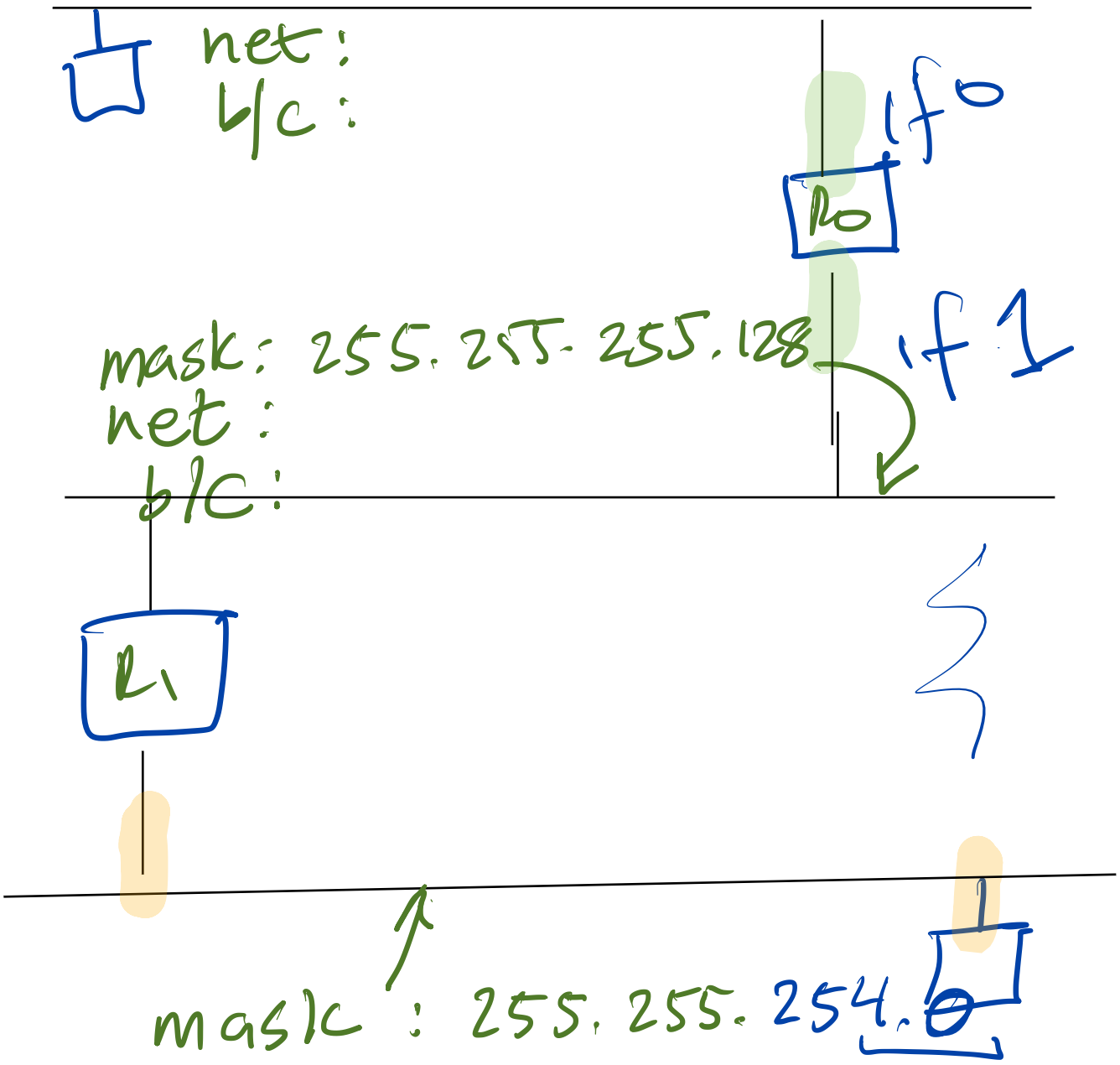


original IP net: 128.96.0.0



original IP net: 128.96.0.0

mask: 255.255.255.128



mask : 255.255.254.0

sub: net : 128.96.10.0

b/c : 128.96.11.255

original IP net: 128.96.0.0

Copy fm before

find dest

subnet for

IP addrs

Rt. Table at R0

(sub) net	mask	NH
128.96.34.0	255.255.255.128	if 0
128.96.34.128	255.255.255.128	if 1
128.96.33.0	255.255.255.0	R1

Fwd'ing rule w/ Subnets

For each RT entry

- Bitwise AND Dst. IP add & network mask
- if result = subnet ID, fwd to NH

Fwd to default route

DHCP

ARP

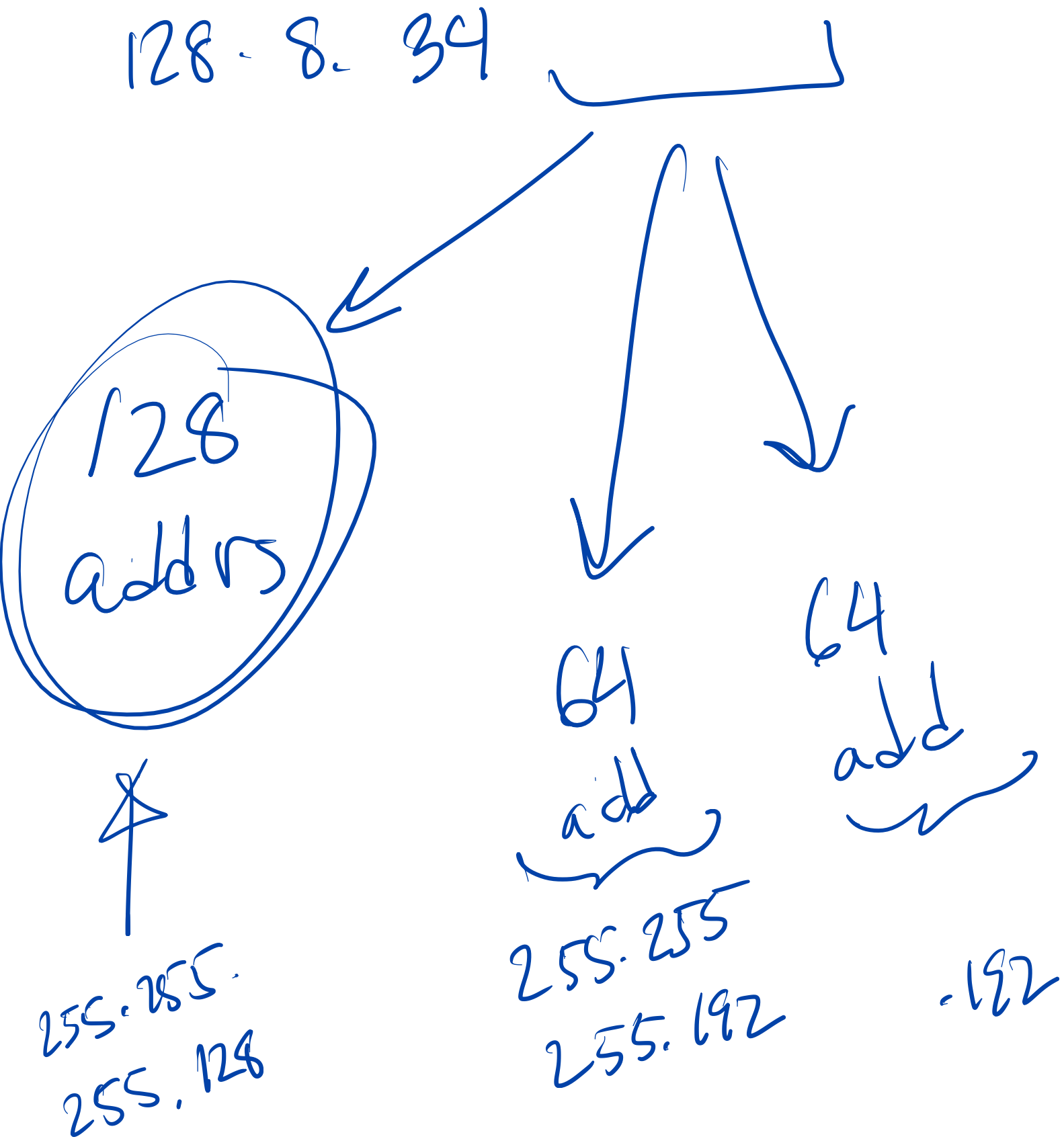
Address Resolution Protocol

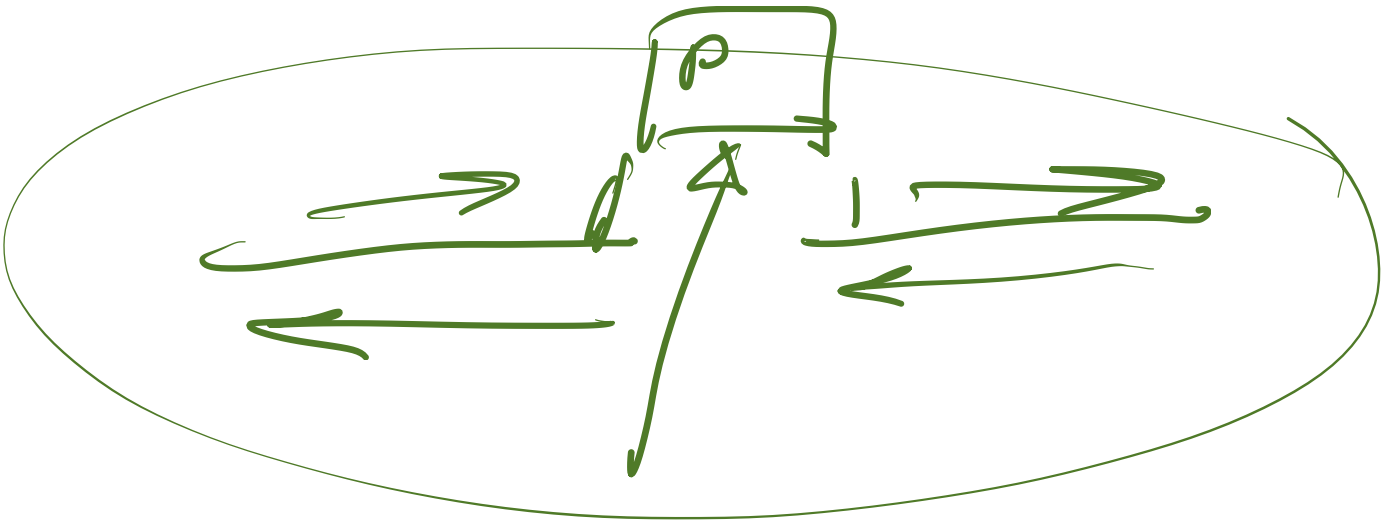
Binding between IP & Ethernet

Local link protocol.

- possible to have two 'subnets' on same phy. wire?

- possible to 'bridge' two phy. wires to create a single large subnet?


128.8.34
128
addrs
64
add
64
add
255.255.
255.128
255.255
255.192
.192



Proxy ARP