Willian Prado
04/25/2025

3 Network	Logical packet	IPv4/v6	Router
2 Data Link	MAC Physical routine		Switch N=C AP
1 Physical	Bit's 1,0		

wire   wire
T/P   Antena
Cooper
Fiber   Media Converter

Repeter
Hub

Not intelligence

switch

collission   Collission

T/P
Converter box

RX TX

Broadcast Domain

Router
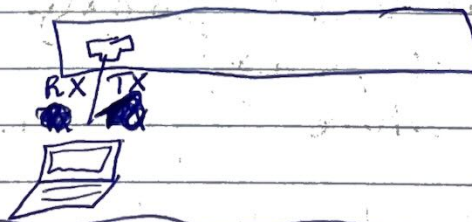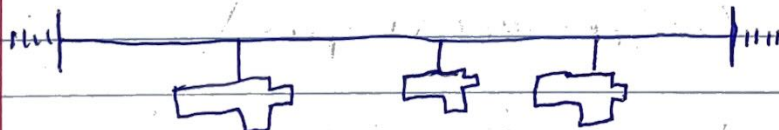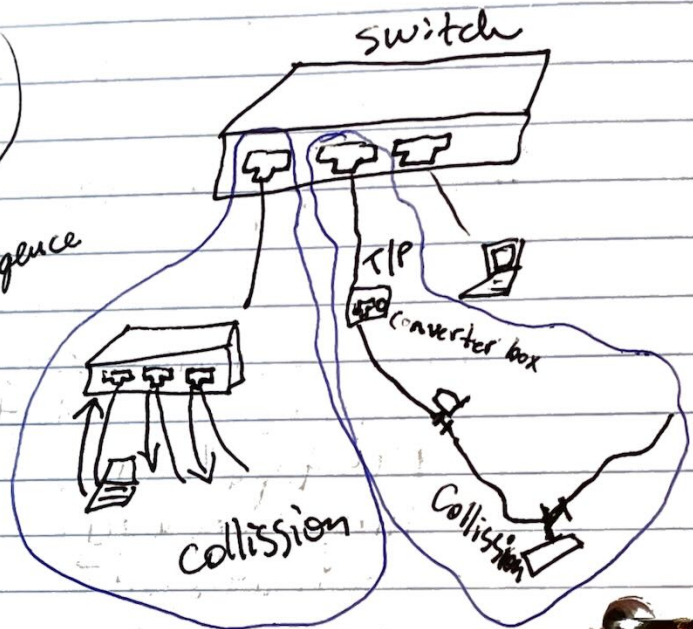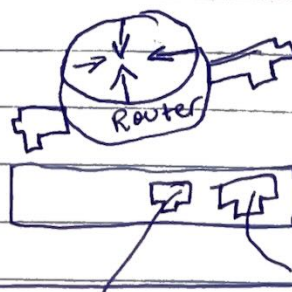
Mr. Dee's Device
Layer 3.

switch   router
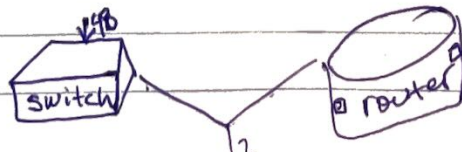
Layer 2 vs Layer 3 switches.

Layer 3 - Network layer also known (multi layer)
Layer 3 switch

VLANs.

Video

Tecnc — router — admin

4P   24

192.168.2.0   192.68.2.1.0
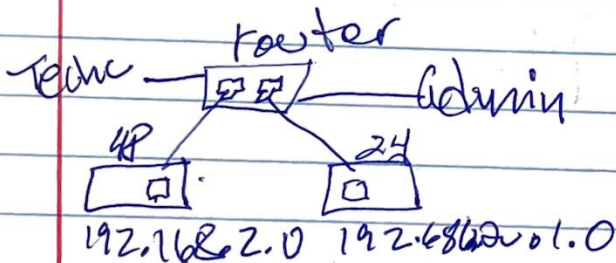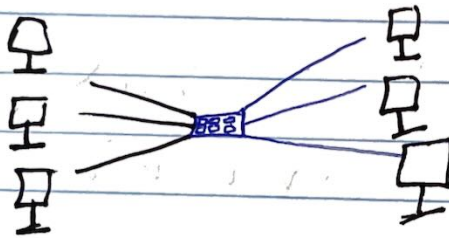
Summy - Collision domain + Broadcast domain

Switch — layer 2 Device
switch is much smarter than the hub.

AAA

DST MAC. FF:FF:FF:FF:FF:FF;

SPC MAC: AA:

Routers operates on layer 3.

Summy - Collision vs. broadcast domain: Hub,
switch. & Router.

ARP: ± Paddr
?

- Collision Domain vs Broadcast domain.

Collision happen on networks where there's hub.
Switches will only forward data to the intended destination
port.

Coax

Ethernet
CSMA/CD
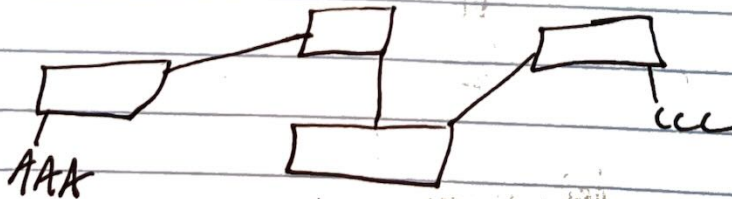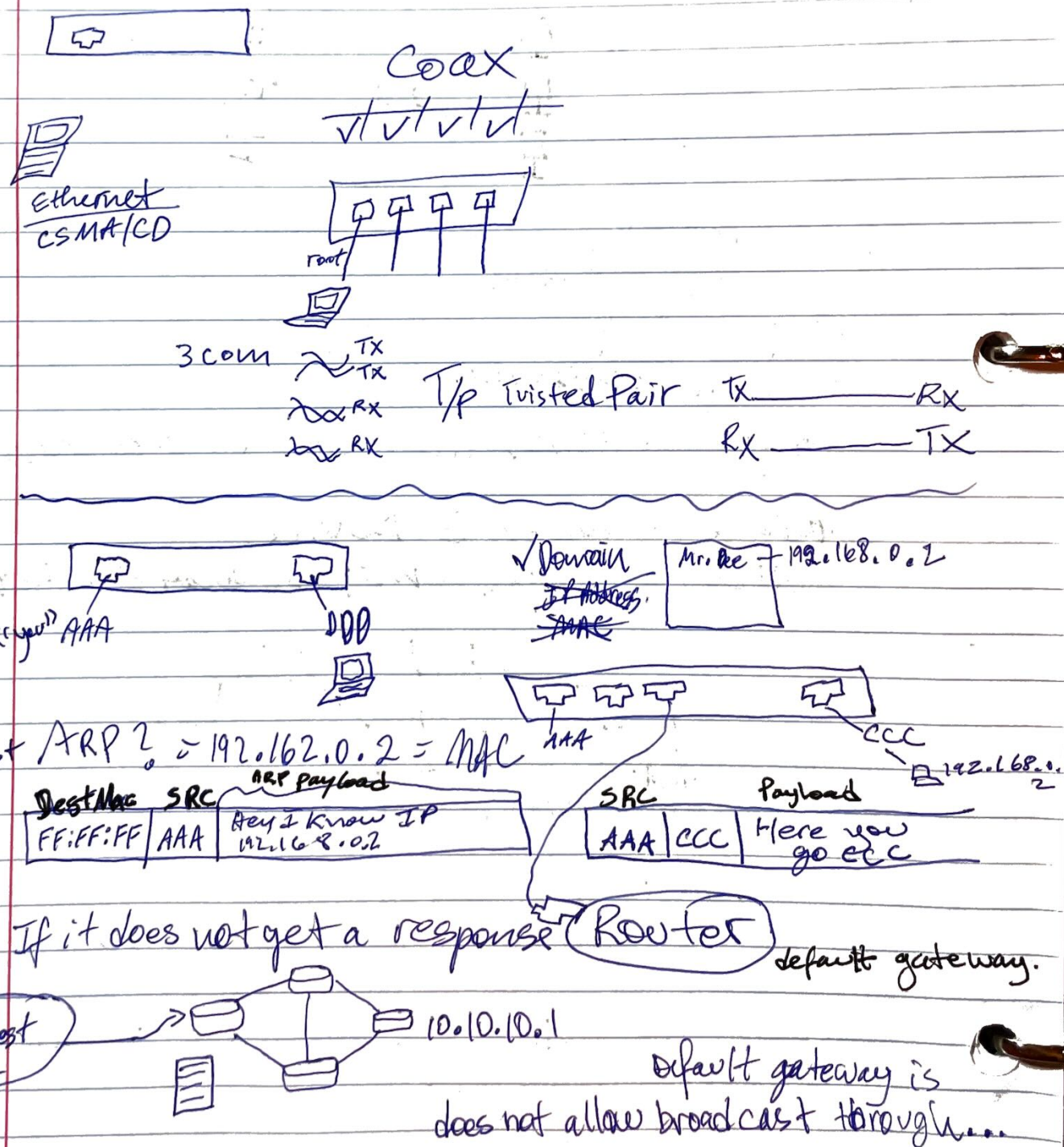
root

3com TX
TX
RX
RX

T/p Twisted Pair TX ———— RX
RX ———— TX

Switch
learn
MAC
Address.

("you") AAA

√Domain   Mr. Bee — 192.168.0.2
I.P Address.
MAC

Route request   ARP? = 192.162.0.2 = MAC AAA
from

ARP payload   CCC
                                     192.168.0.2

Dest Mac	SRC			SRC	Payload
FF:FF:FF	AAA	Hey I know IP 192.168.0.2		AAA	CCC	Here you go CCC

If it does not get a response (Router) default gateway.

Router request
from Client   10.10.10.1

default gateway is
does not allow broadcast through....

William Prado
04-25-2025

Background
1. tradional Method "classic"
2. VLANs
3. Layer 3 / Layer 4 swich

1 router & 3 domain

192.168.3.0

router

VLAN = virtual Lan

192.168.1.0

192.168.20

192.168.3.0 vLAN

Domain switch vLAN

Domain vLAN

Domain switch vLAN

| 1 2 3 4 | 5 6 7 8 | 9 10 11 12 |
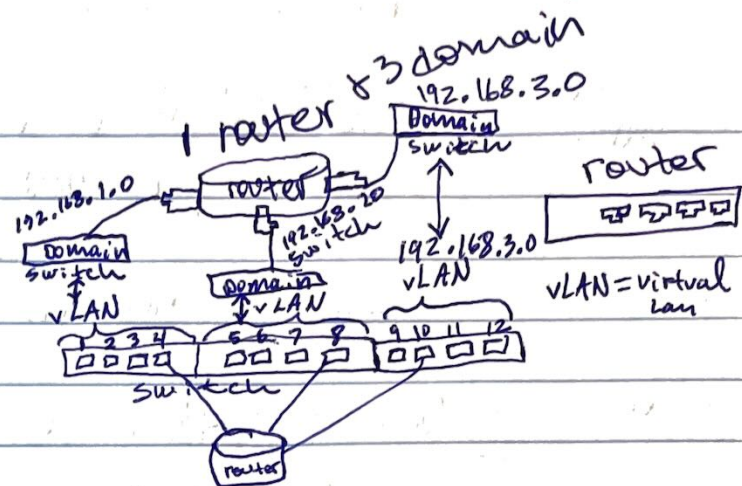
switch

router

Layer 3. the router is built into the switch.
Switch.
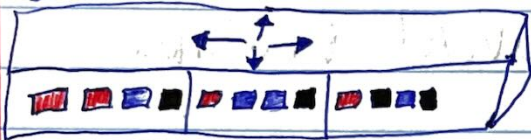
VLAN - Virtual Local Area Network

What is VLAN and why VLAN?
Segmentation.
Security.
Easy to manage.

Subnets vs. Vland.
  Improve performance
  security
  Management

Broadcast does not go thru router, It will stay within the network.
You can separate the company departments by Using router.

Subnet you will need to have router.

Routing Tables: router's internal maps guide data packets to their destinations.

Dynamic Routing: protocols automate routing information exchange btwn routers.

Good Will

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04-25-2025

Youtube
Sunny.

VLAN: Static vs Dynamic vLAN
Static is port base.

Dynamic is based on MAC. address.

youtube   sunny Default VLAN + Native VLAN.
youtube   sunny Inter VLAN Routing
    Option 1. traditional
    Option 2. Router on a Stick
    Option 3. Multilayer Switch InterVLAN Routing.

youtube sunny IEEE 802.1q: Tagging + trunking basics.

- Lab 4.6.10
    root
    password!

1,2,4 + 5... Labs

1. 10.11.2.5
    11.2.0/24
    host of 5
    10.10.1.11