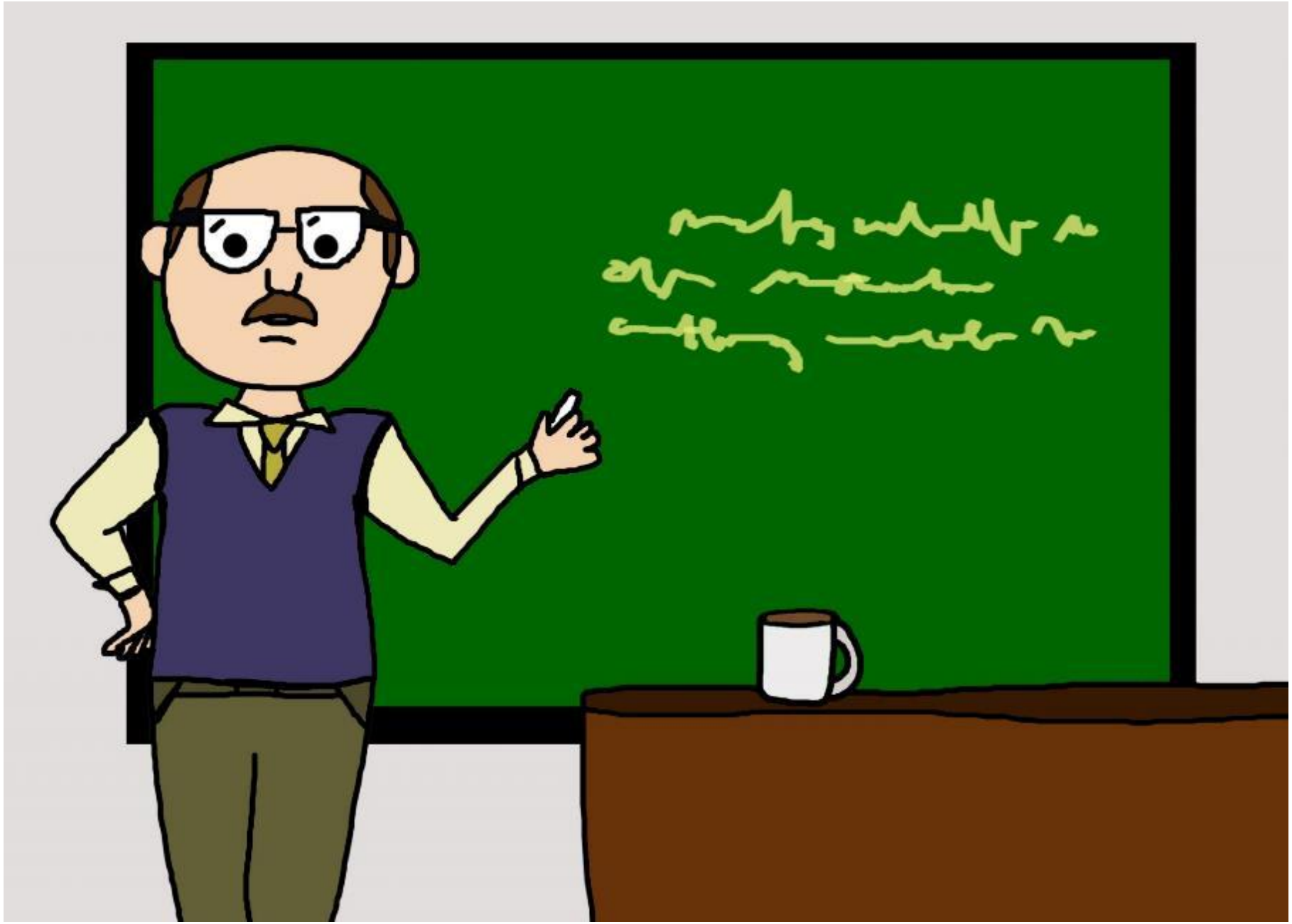
TEKNIQ
INSTALLATØRERNES ORGANISATION

DANSK EL-FORBUND

Den Store Blå

ELEKTRIKERUDDANNELSEN

H1 data



21594 Kommunikationsnetværk

H1

1) Lærlingen har kendskab til OSI-modellens lag 1-4
6) Lærlingen har kendskab til TCP/IP-protokol, herunder IP-adresser, subnet og DHCP.
7) Lærlingen kan anvende systemkommandoer som fx IPCONFIG og PING til at teste netværk via PC.
8) Lærlingen kan installere og programmere forskellige netværkstyper i boliger fx mesh, herunder oprette to adskilte netværk fx et gæstenetværk og et privat netværk.
9) Lærlingen kan planlægge, opbygge og installere et trådløst netværk under hensyn til bygningskonstruktioner, andre signaler og elektrisk støj.
11) Lærlingen kan vælge og indstille frekvens og kanal for trådløse netværk.

H2

2) Lærlingen kan vælge og installere netværks- og datakabler og datakonnektorer (COAX og Twisted Pair) efter korrekt installationspraksis herunder bøjningsradius og respektafstand til stærkstrømskabler og Remote Powering (PoE) i føringsveje.
5) Lærlingen har kendskab til test af netværkskabler (COAX og Twisted Pair) i henhold til gældende standarder.
12) Lærlingen har kendskab til data- og cybersikkerhed i forbindelse med opbygning og drift af netværk, fx password, skjult SSID og port forwarding.
13) Lærlingen har kendskab til PoE og IoT-teknologi.
14) Lærlingen kan anvende relevante love, regler og standarder i forhold til netværk.

Multiple Choice !!!

- Enkeltmandsprøve
- Udleverede papirer
- Egne noter

Mobil, tablet eller PC bruges kun til opslag i egne noter – ingen søgning på nettet.

Prøve er karaktergivende !

	H1
Fre 23/1	TEORI: - **IP-adresser** (klasser-private-public-subnetmask-gateway-na-fha-lha-bc-nat) - **Topologier** (lan-wan-man-pan-internet-extranet-intranet) - **Netværkskomponenter** (switch-router-wap-repeater-modem-hjemmerouter) PRAKTIK: - **Packet Tracer øvelser**
Man 26/1	TEORI: - **Repetition** - **Netværkskommunikation** (isp-medier-ip-opsætning) - **Protokoller** (dns-dhcp) - **OSI-modellen** - **Test af netværk** (ipconfig-ping) - **Trådløst netværk** PRAKTIK: - **Hjemmerouter**
Tirs 27/1	TEORI: - **Repetition** - **Besøg af DEF 10.00 – 11.30** - **Adresseplaner** PRØVER: - **Opsætning af trådløs router og mindre netværk** - **Oprydning** - **Teoretisk prøve**

IP-adresse (IPv4)

180.65.11.101

47.208.65.89

228.28.45.255

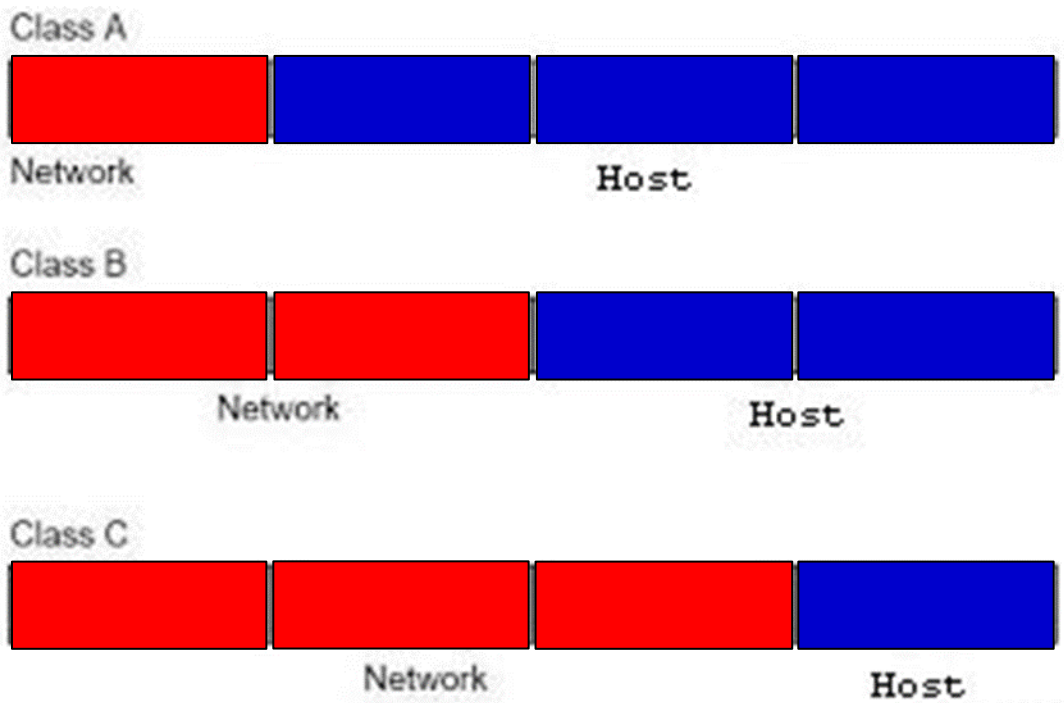
Class	Range
A	**0**.0.0.0 to **127**.255.255.255
B	**128**.0.0.0 to **191**.255.255.255
C	**192**.0.0.0 to **223**.255.255.255
D	**224**.0.0.0 to **239**.255.255.255
E	**240**.0.0.0 to **255**.255.255.255

199.66.1.77

Class	*IP address range (1st Octet)*	*Network Mask*	*Prefix*	*Number of Networks*	*Number of Hosts*
A	1. - 127.	255.0.0.0	/8	125	16,777,214
B	128. - 191.	255.255.0.0	/16	16,382	65,534
C	192. - 223.	255.255.255.0	/24	2,097,150	254
D	224. - 239.	Multicast addresses			
E	240. - 254.	Restricted/Experimental			

29.90.100.5

10.40.1.46

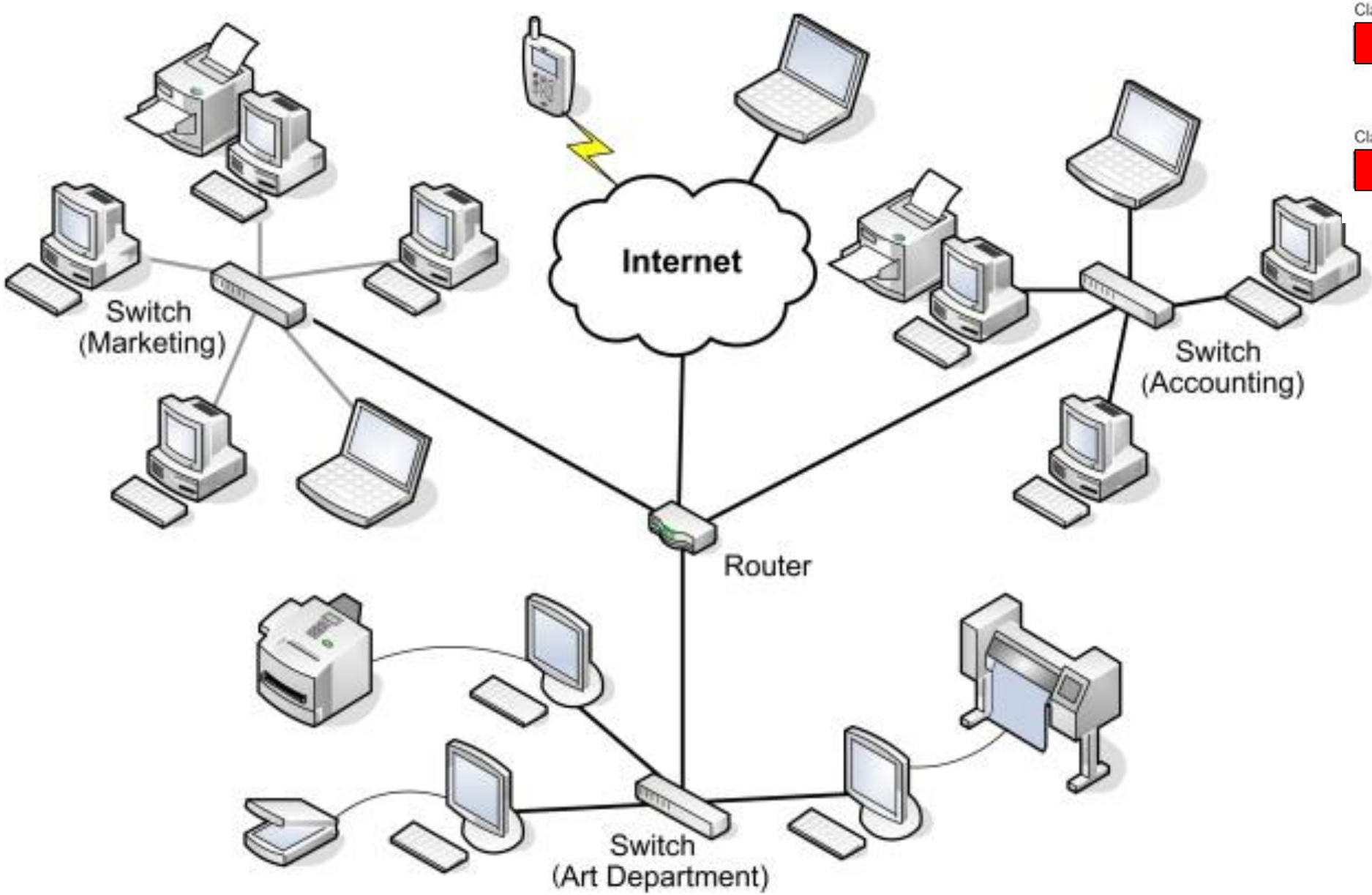


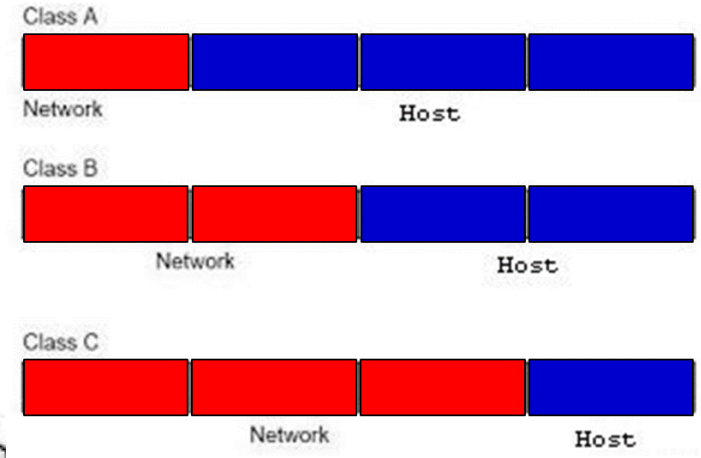
f.eks 86.155.2.65

f.eks 186.18.30.141

f.eks 195.7.60.11

Hvad er et Netværk???

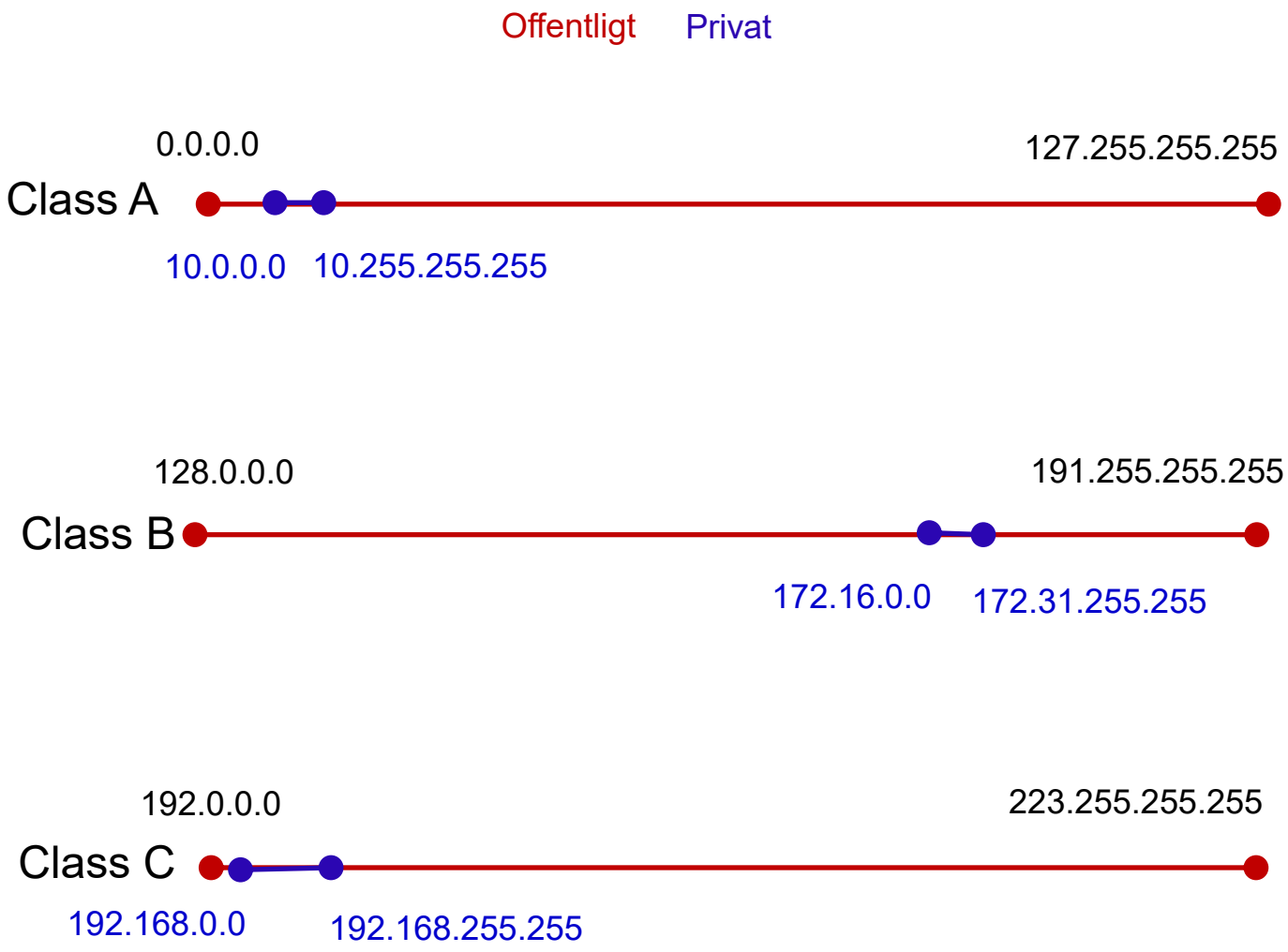




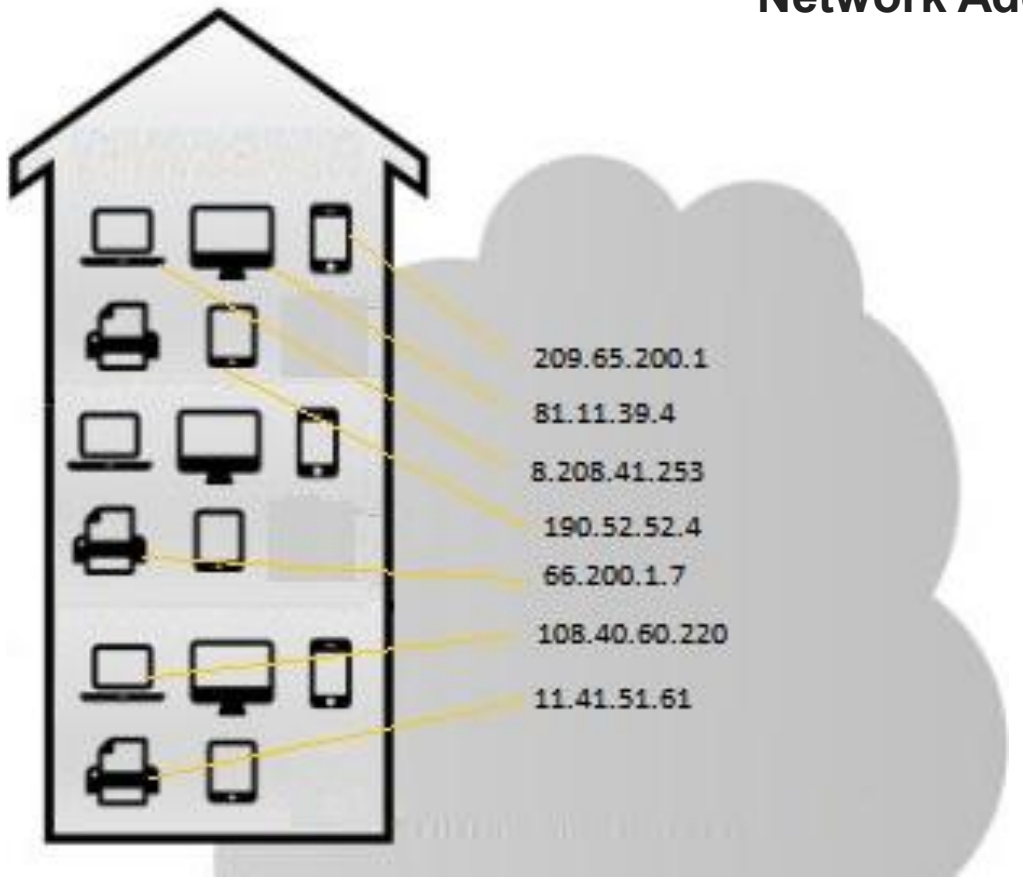
Class	Range
A	**0**.0.0.0 to **127**.255.255.255
B	**128**.0.0.0 to **191**.255.255.255
C	**192**.0.0.0 to **223**.255.255.255
D	**224**.0.0.0 to **239**.255.255.255
E	**240**.0.0.0 to **255**.255.255.255

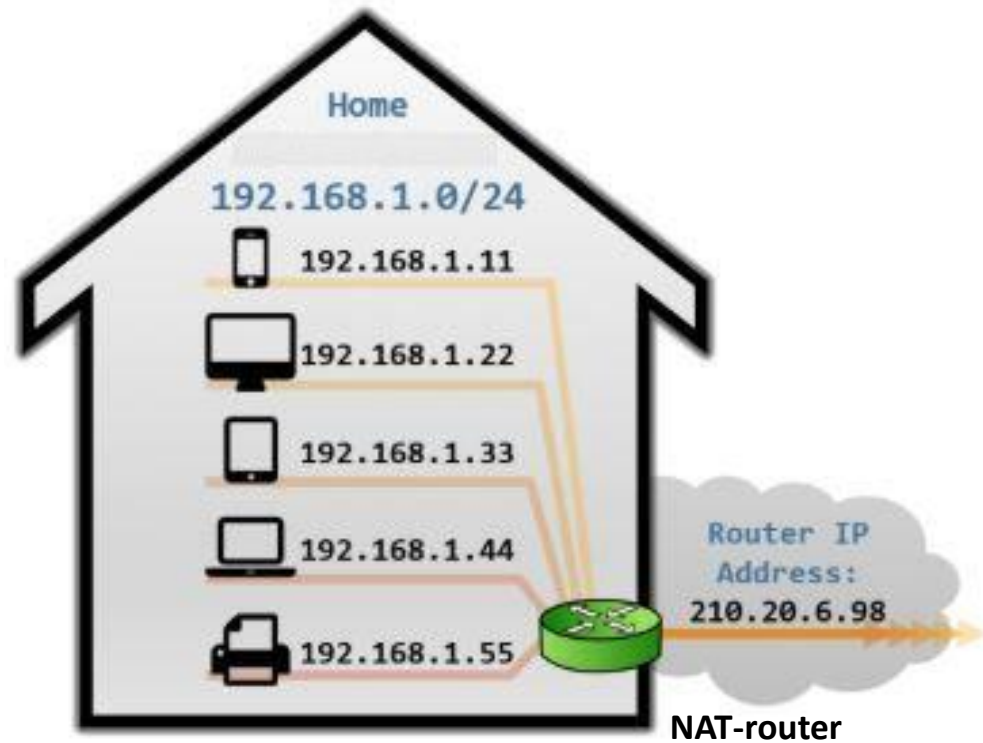
The Private Address Blocks

Network Address and Prefix	**RFC 1918 Private Address Range**
10.0.0.0/8	10.0.0.0 - 10.255.255.255
172.16.0.0/12	172.16.0.0 - 172.31.255.255
192.168.0.0/16	192.168.0.0 - 192.168.255.255

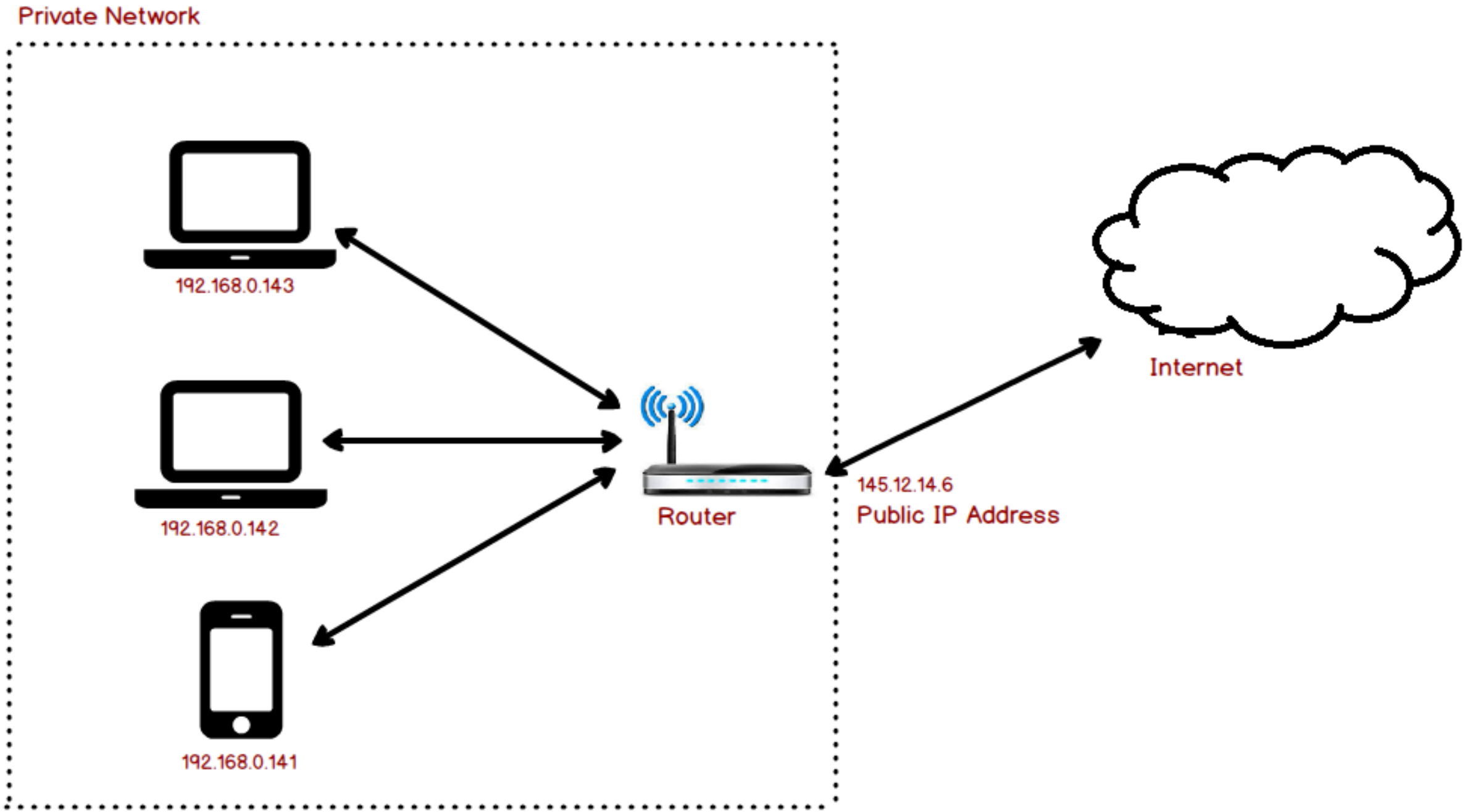

Offentligt
Privat
0.0.0.0
127.255.255.255
Class A
10.0.0.0
10.255.255.255
128.0.0.0
191.255.255.255
Class B
172.16.0.0
172.31.255.255
192.0.0.0
223.255.255.255
Class C
192.168.0.0
192.168.255.255

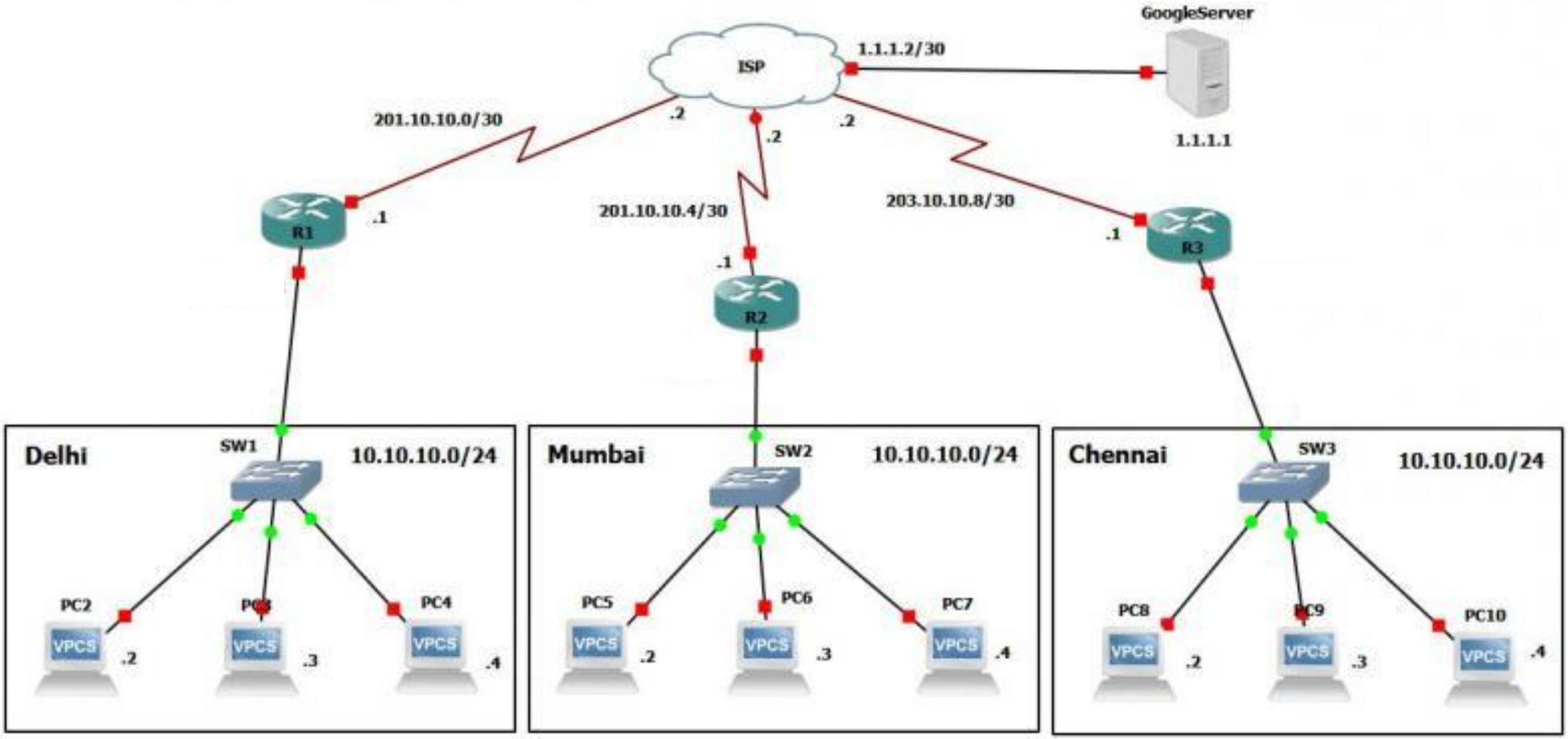
Network Address Translation (NAT)



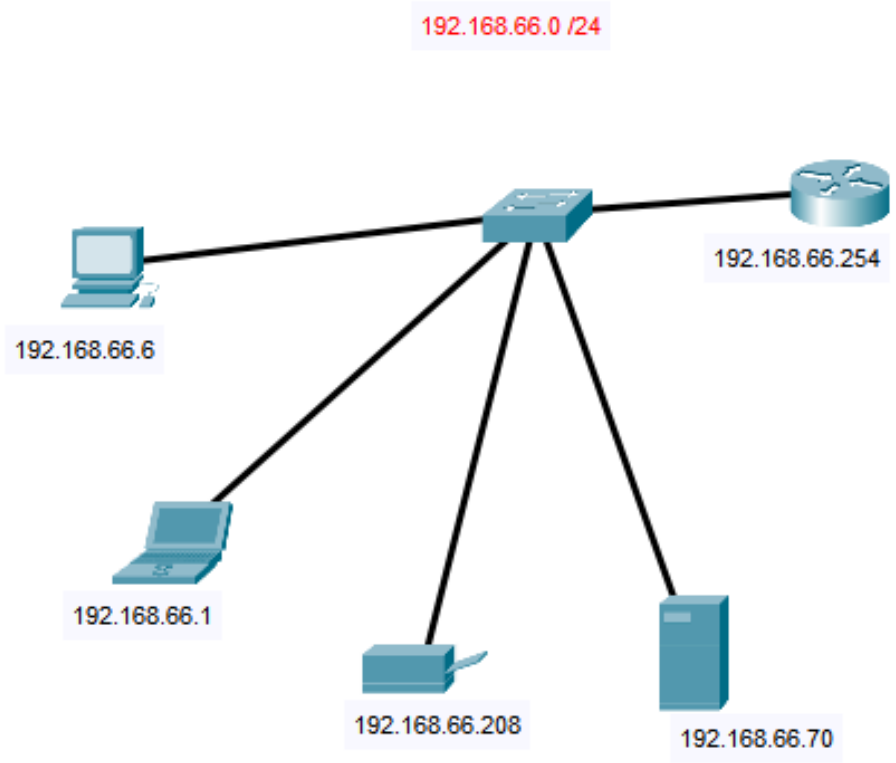


NAT-router


Private Network
192.168.0.143
192.168.0.142
192.168.0.141
Router
145.12.14.6
Public IP Address
Internet

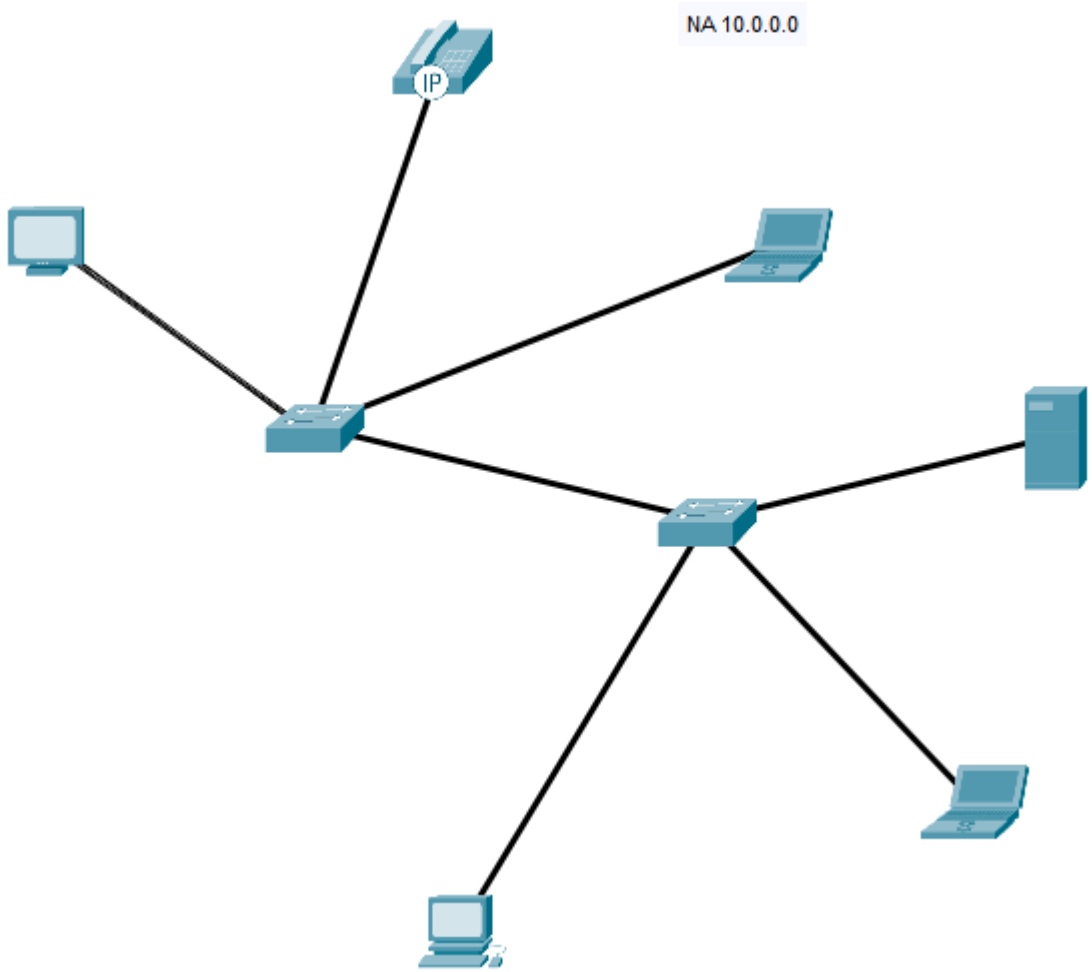

GoogleServer
ISP
1.1.1.2/30
1.1.1.1
201.10.10.0/30
.2
.2
.2
201.10.10.4/30
203.10.10.8/30
.1
.1
.1
R1
R2
R3
Delhi
SW1
10.10.10.0/24
PC2
PC3
PC4
VPCS
.2
.3
.4
Mumbai
SW2
10.10.10.0/24
PC5
PC6
PC7
VPCS
.2
.3
.4
Chennai
SW3
10.10.10.0/24
PC8
PC9
PC10
VPCS
.2
.3
.4

192.168.66.0 / 255.255.255.0
192.168.66.1
192.168.66.2
192.168.66.3
192.168.66.4
.
.
.
.
192.168.66.253
192.168.66.254
192.168.66.255

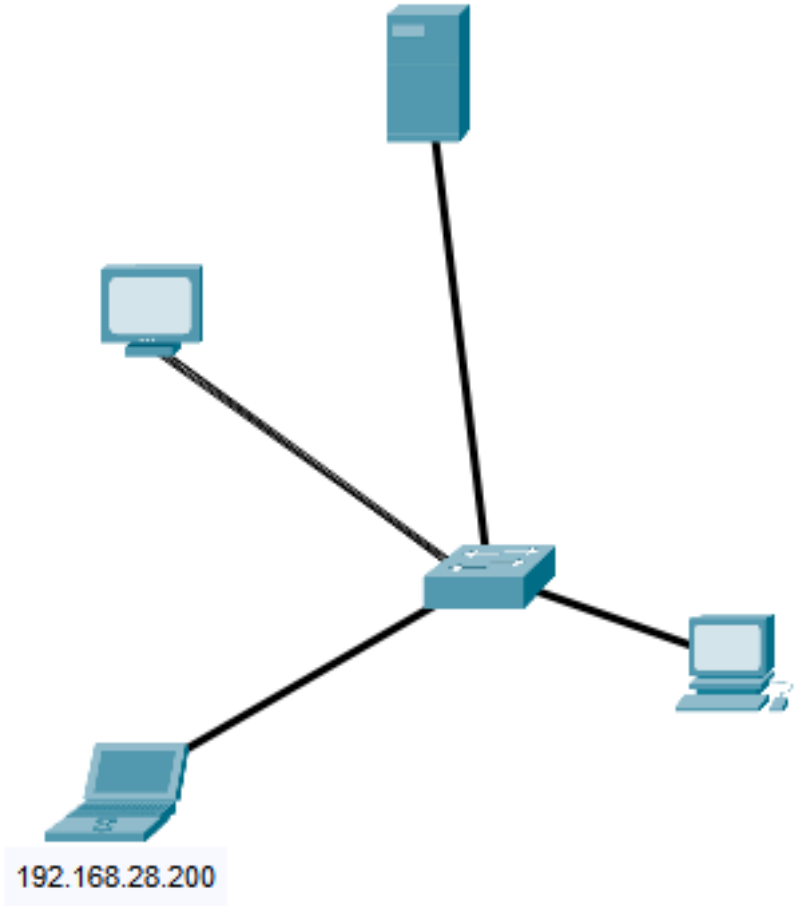


Network Address	**NA**	**192.168.66.0**
First Host Address	**FHA**	**192.168.66.1**
Last Host Address	**LHA**	**192.168.66.254**
Broadcast	**BC**	**192.168.66.255**

10.0.0.0 /255.0.0.0



Network Address	**NA**	
First Host Address	**FHA**	
Last Host Address	**LHA**	
Broadcast	**BC**	



Network Address	**NA**	
First Host Address	**FHA**	
Last Host Address	**LHA**	
Broadcast	**BC**	

Classbestemmelse.

Bestem hvilken Class (Classfull) og hvilke oktet-typer

1		172.28.5.13	7		110.26.4.100
2		16.140.55.200	8		160.2.55.177
3		10.23.40.114	9		230.35.7.102
4		210.88.213.245	10		222.109.44.2

		N N H H				N H H H	
1	B	172.28.5.13		7	A	110.26.4.100	
		N H H H				N N H H	
2	A	16.140.55.200		8	B	160.2.55.177	
		N H H H					
3	A	10.23.40.114		9	D	230.35.7.102	
		N N N H				N N N H	
4	C	210.88.213.245		10	C	222.109.44.2	
		N H H H				N N H H	
5	A	66.16.42.200		11	B	170.255.14.9	
		N N N H				N H H H	
6	C	201.14.67.111		12	A	5.40.6.38	

Device A	Device B	Samme netværk	Forskellige netværk	Samme netværk	Forskellige netværk
192.168.16.25/24	192.168.16.70/24	X		X	
172.16.5.10/16	172.16.12.10/16			X	
10.0.5.110/8	10.0.5.2/8			X	
30.24.50.8/8	32.24.50.8/8				X
200.15.66.40/24	201.15.66.40/24				X
188.14.14.14/16	188.15.14.20/16				X
124.254.2.80/8	124.254.8.20/8			X	
100.100.50.50/8	150.10.60.70/8				X
170.155.254.26/16	170.170.156.40/16				X
30.40.50.60/8	31.41.51.61/8				X
108.45.99.190/8	108.45.100.191/8			X	
201.25.100.40/24	201.24.100.200/24				X
170.45.45.11/16	170.45.45.120/16			X	
190.200.2.73/16	190.20.2.72/16				X
200.200.200.0/24	200.200.200.200/24			X	
47.15.20.12/8	47.20.15.12/8			X	
130.20.20.85/16	120.30.30.58/16				X
222.11.111.222/24	222.111.11.111/24				X
194.1.50.82/24	196.1.50.200/24				X
150.10.200.4/16	150.10.100.8/16			X	
160.160.160.160/24	160.170.180.190/24				X

Udfyld tomme felter.

NA	172.16.0.0		**NA**	
FHA			**FHA**	
LHA			**LHA**	130.27.255.254
BC			**BC**	
NA	192.168.5.0		**NA**	
FHA			**FHA**	

NA	172.16.0.0	NA	130.27.0.0
FHA	172.16.0.1	FHA	130.27.0.1
LHA	172.16.255.254	LHA	130.27.255.254
BC	172.16.255.255	BC	130.27.255.255

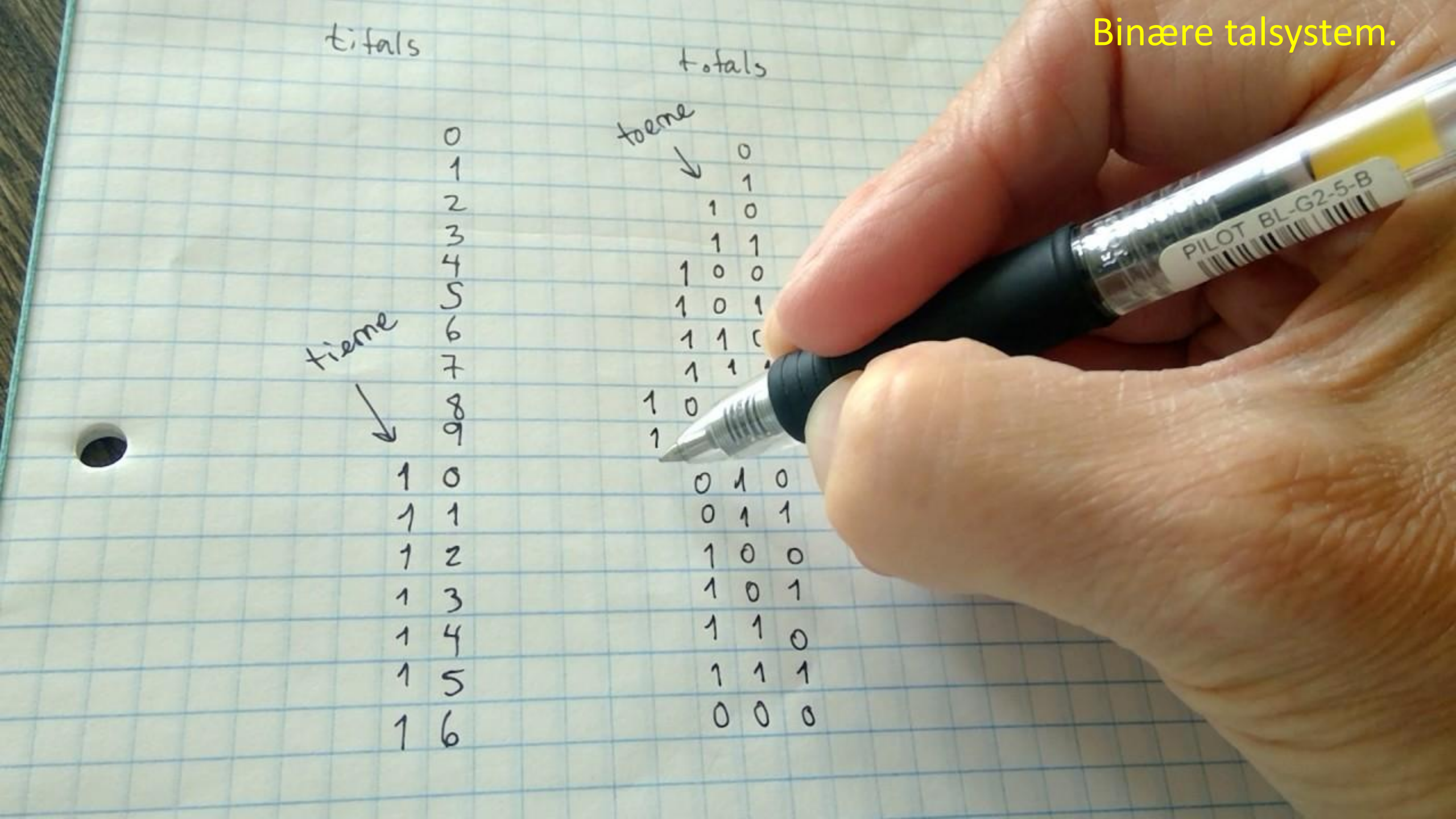
NA	192.168.5.0	NA	62.0.0.0
FHA	192.168.5.1	FHA	62.0.0.1
LHA	192.168.5.254	LHA	62.255.255.254
BC	192.168.5.255	BC	62.255.255.255

NA	10.0.0.0	NA	198.255.255.0
FHA	10.0.0.1	FHA	198.255.255.1
LHA	10.255.255.254	LHA	198.255.255.254
BC	10.255.255.255	BC	198.255.255.255

NA	190.0.0.0	NA	100.0.0.0
FHA	190.0.0.1	FHA	100.0.0.1
LHA	190.0.255.254	LHA	100.255.255.254
BC	190.0.255.255	BC	100.255.255.255

NA	200.5.8.0	NA	172.35.0.0
FHA	200.5.8.1	FHA	172.35.0.1
LHA	200.5.8.254	LHA	172.35.255.254
BC	200.5.8.255	BC	172.35.255.255

Binære talsystem.



Konvertering binær decimal

$00101001_{(2)}$ = _____$_{(10)}$

$00000111_{(2)}$ = _____$_{(10)}$

$00001100_{(2)}$ = _____$_{(10)}$

$00000010_{(2)}$ = _____$_{(10)}$

$01110010_{(2)}$ = _____$_{(10)}$

00010

Dokument sidst ændret: lø kl. 09:19

$00001010_{(2)}$ = _____$_{(10)}$

$00000001_{(2)}$ = _____$_{(10)}$

$01010101_{(2)}$ = _____$_{(10)}$

$01111111_{(2)}$ = _____$_{(10)}$

$224_{(10)}$= _____$_{(2)}$

$129_{(10)}$= _____$_{(2)}$

$188_{(10)}$= _____$_{(2)}$

$14_{(10)}$= _____$_{(2)}$

Konvertering binær decimal

$00101001_{(2)}$ = _____**41**_____$_{(10)}$

$00010000_{(2)}$ = _____**16**_____$_{(10)}$

$00000111_{(2)}$ = _____**7**_____$_{(10)}$

$00001010_{(2)}$ = _____**10**_____$_{(10)}$

$00001100_{(2)}$ = _____**12**_____$_{(10)}$

$00000001_{(2)}$ = _____**1**_____$_{(10)}$

$00000010_{(2)}$ = _____**2**_____$_{(10)}$

$01010101_{(2)}$ = _____**85**_____$_{(10)}$

$01110010_{(2)}$ = _____**114**_____$_{(10)}$

$01111111_{(2)}$ = _____**127**_____$_{(10)}$

$224_{(10)}=$ _____**1110 0000**__$_{(2)}$

$188_{(10)}=$ ____**1011 1100**__$_{(2)}$

$129_{(10)}=$ ____**1000 0001**__$_{(2)}$

$14_{(10)}=$ ____**0000 1110**__$_{(2)}$

$72_{(10)}=$ ___**0100 1000**____$_{(2)}$

$110_{(10)}=$ ____**0110 1110**__$_{(2)}$

$240_{(10)}=$ ___**1111 0000**__$_{(2)}$

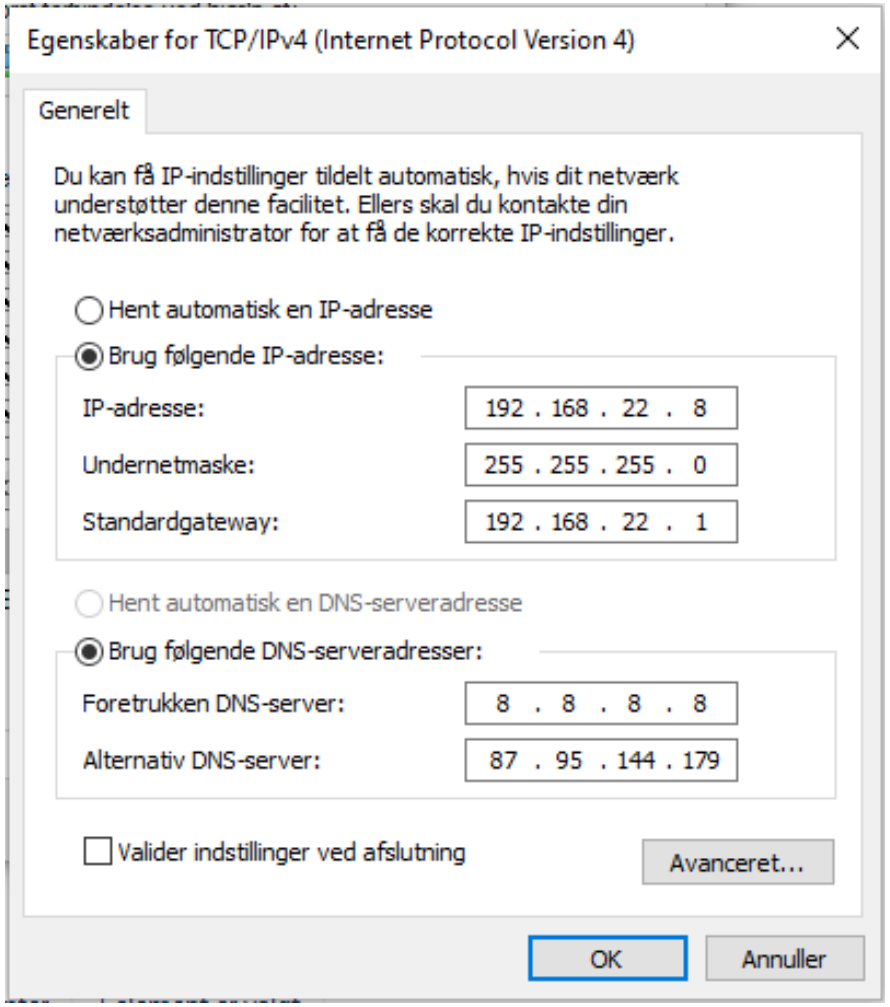
$33_{(10)}=$ ____**0010 0001**__$_{(2)}$

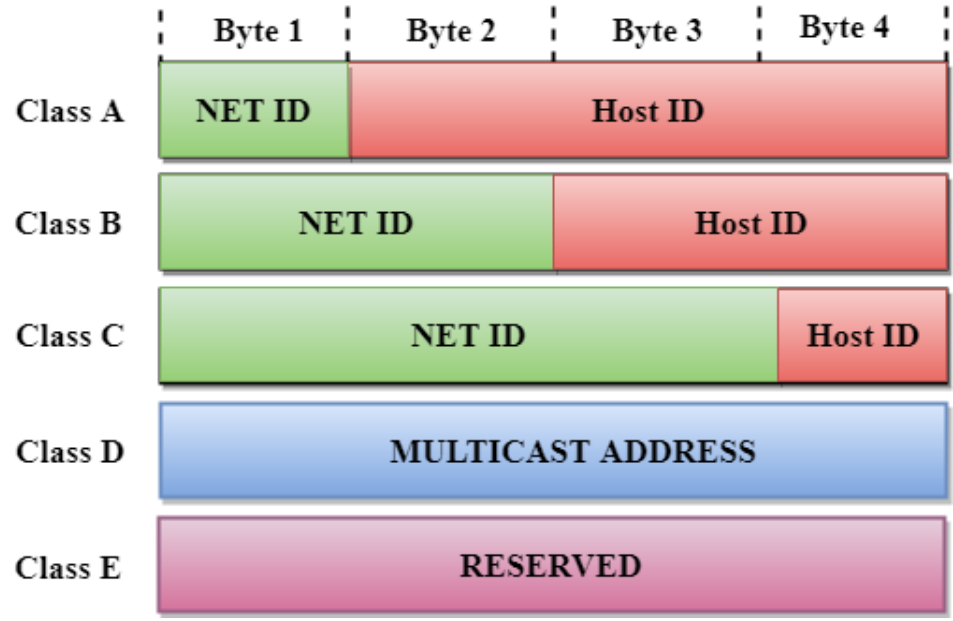
$9_{(10)}=$ ___**0000 1001**__$_{(2)}$

$245_{(10)}=$ ____**1111 0101**__$_{(2)}$


Kahoot!

Undermaske



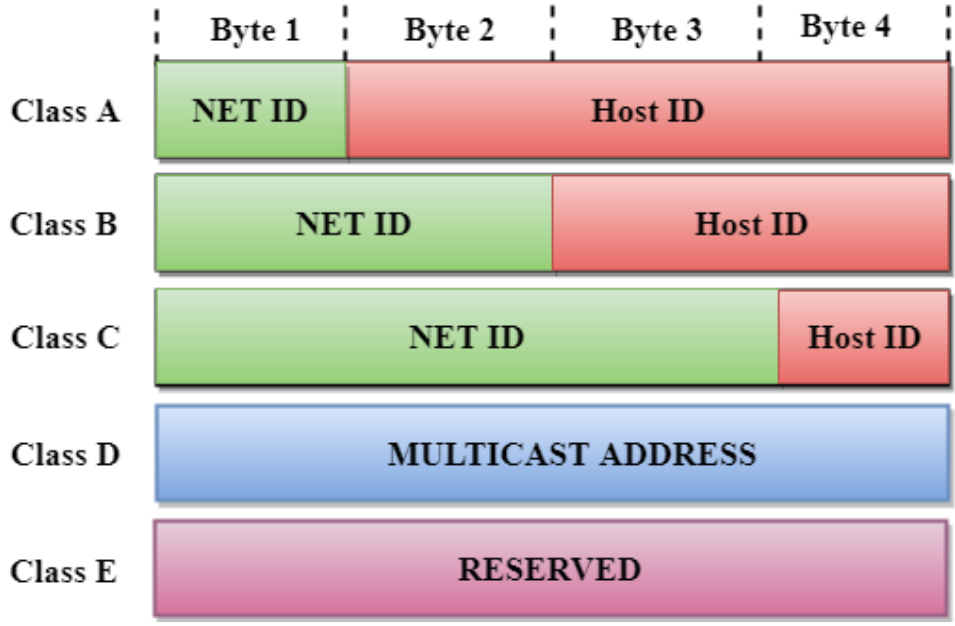


114.5.1.6
255.0.0.0

141.202.8.4
255.255.0.0

197.144.137.2
255.255.255.0

Undermaske



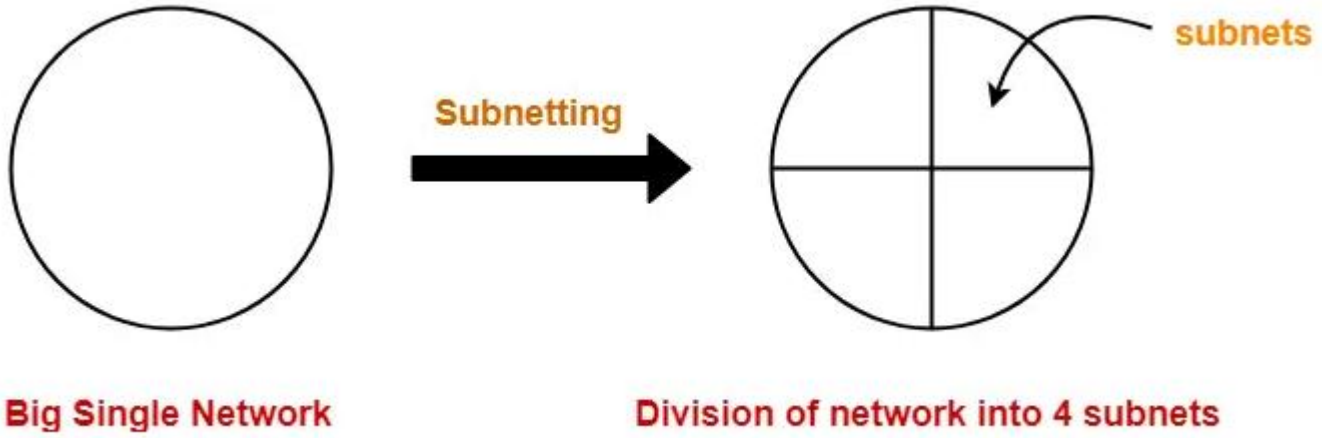
Decimal	Binær	Præfix
255.0.0.0	11111111.00000000.00000000.00000000	/8
255.255.0.0		
255.255.255.0		

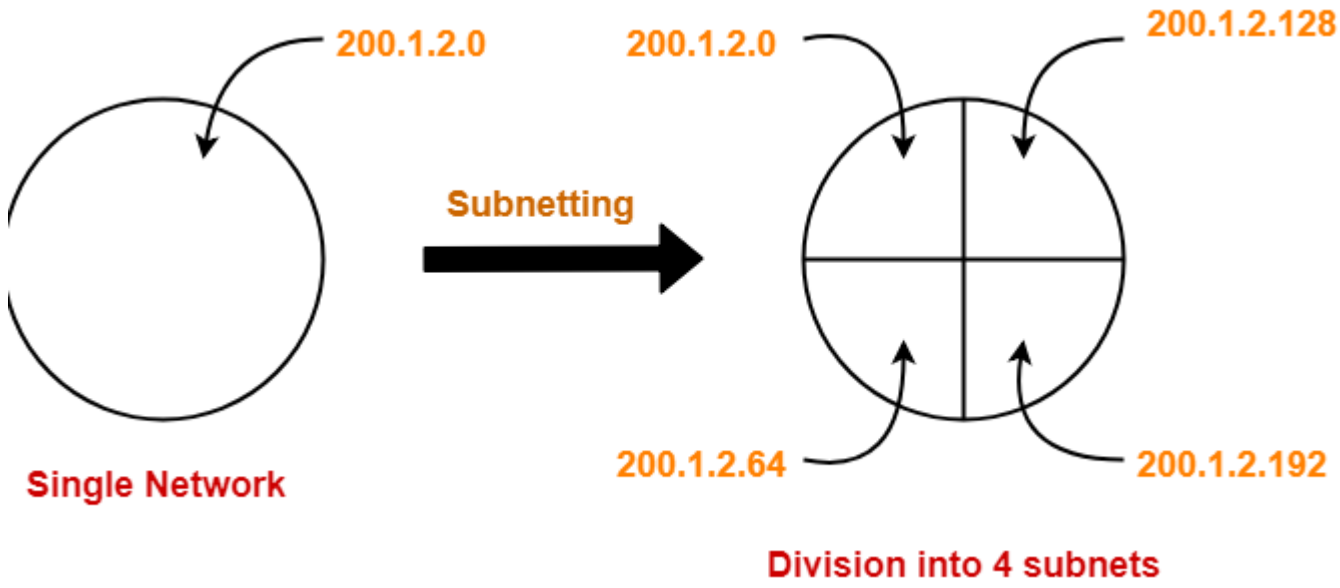
255.255.240.0	11111111.11111111.11110000.00000000	/20
255.255.255.192	11111111.11111111.11111111.11000000	/26
255.255.248.0	11111111.11111111.11111000.00000000	/21

IP Header Classes:

Class	Address Range	Subnet masking	Max number of networks	Max number of hosts	Application
Class A	1 to 126	255.0.0.0	126	16.777.214	Used for large number of hosts.
Class B	128 to 191	255.255.0.0	16.384	65.534	Used for medium size network.
Class C	192 to 223	255.255.255.0	2.097.157	254	Used for local area network.
Class D	224 to 239	NA	NA	NA	Reserve for multicast.
Class E	240 to 254	NA	NA	NA	This class is reserved for research and Development Purposes.

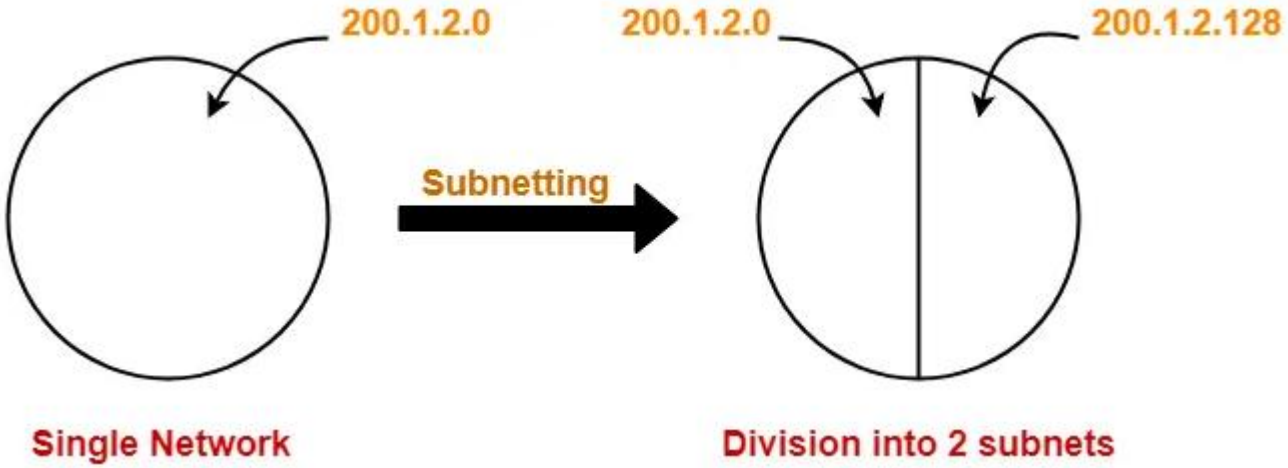
Subnetting

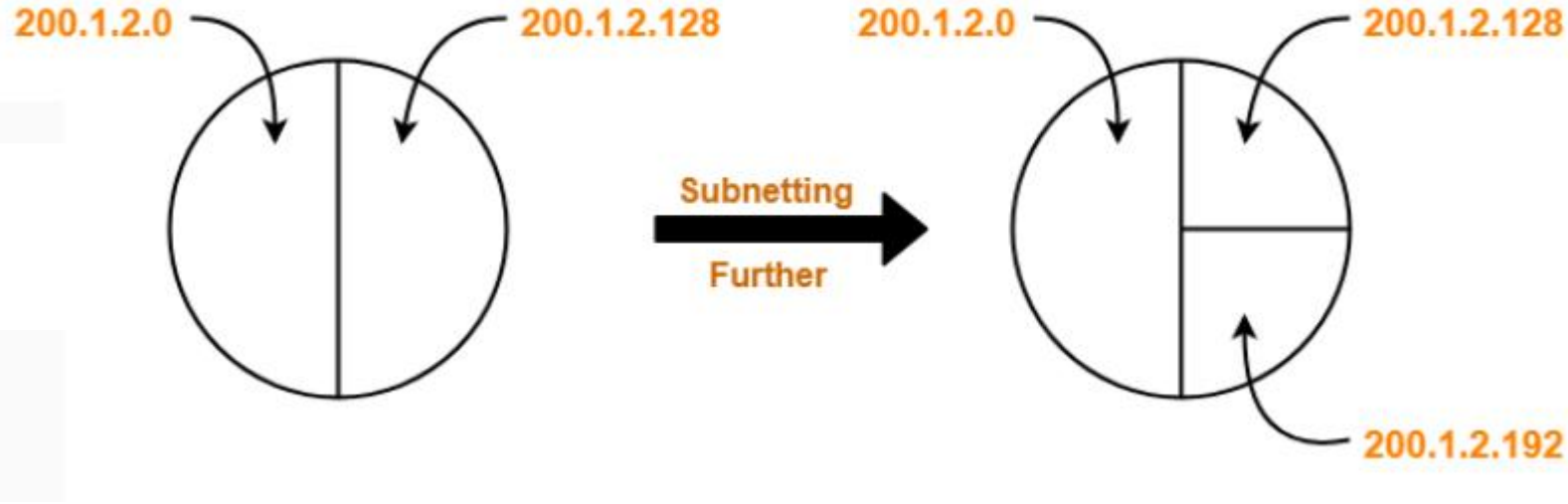




IP: 200.1.2.70
UM: 255.255.255.192

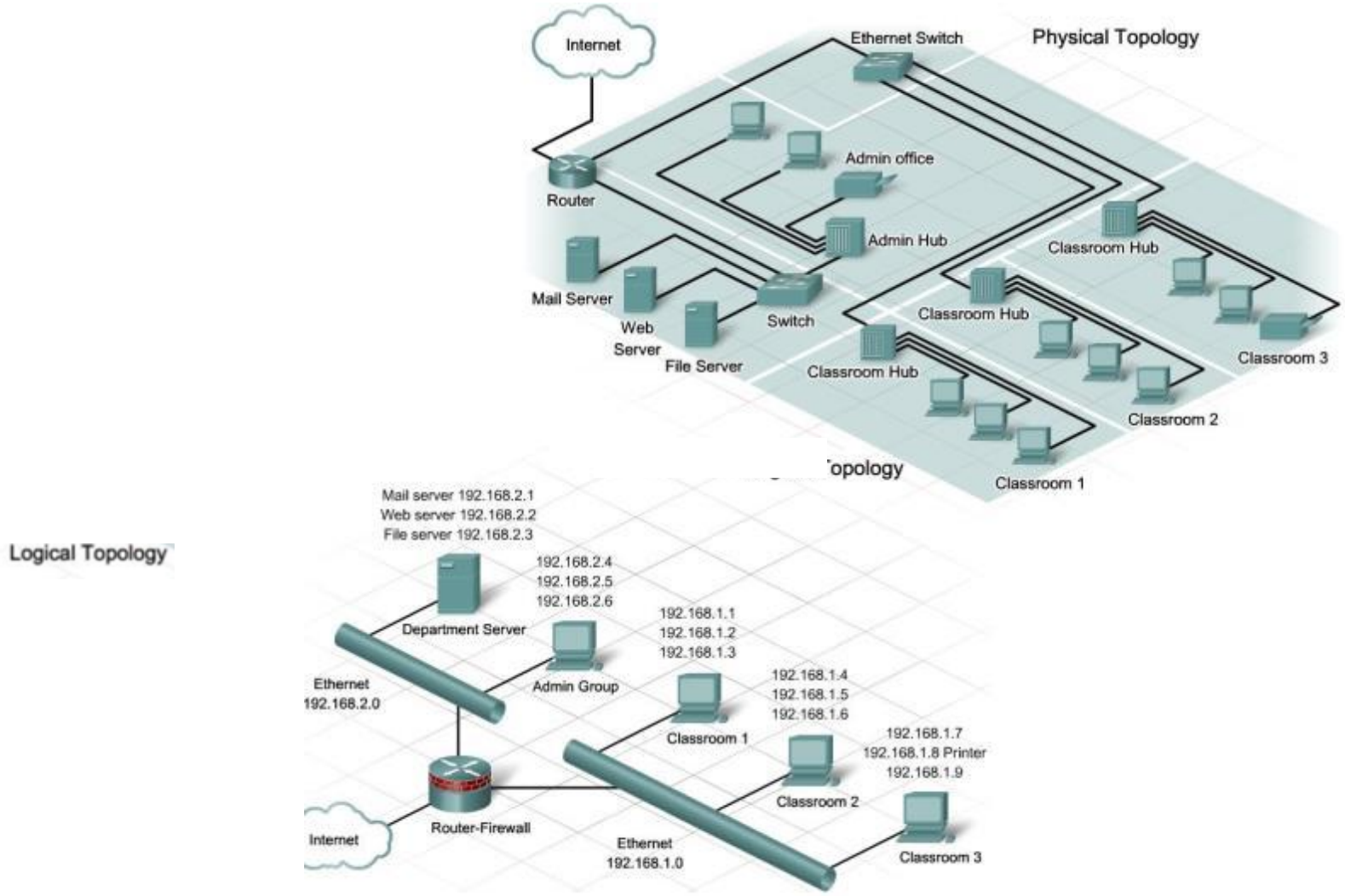
Subnetting


200.1.2.0
Subnetting
Single Network
200.1.2.0
200.1.2.128
Division into 2 subnets

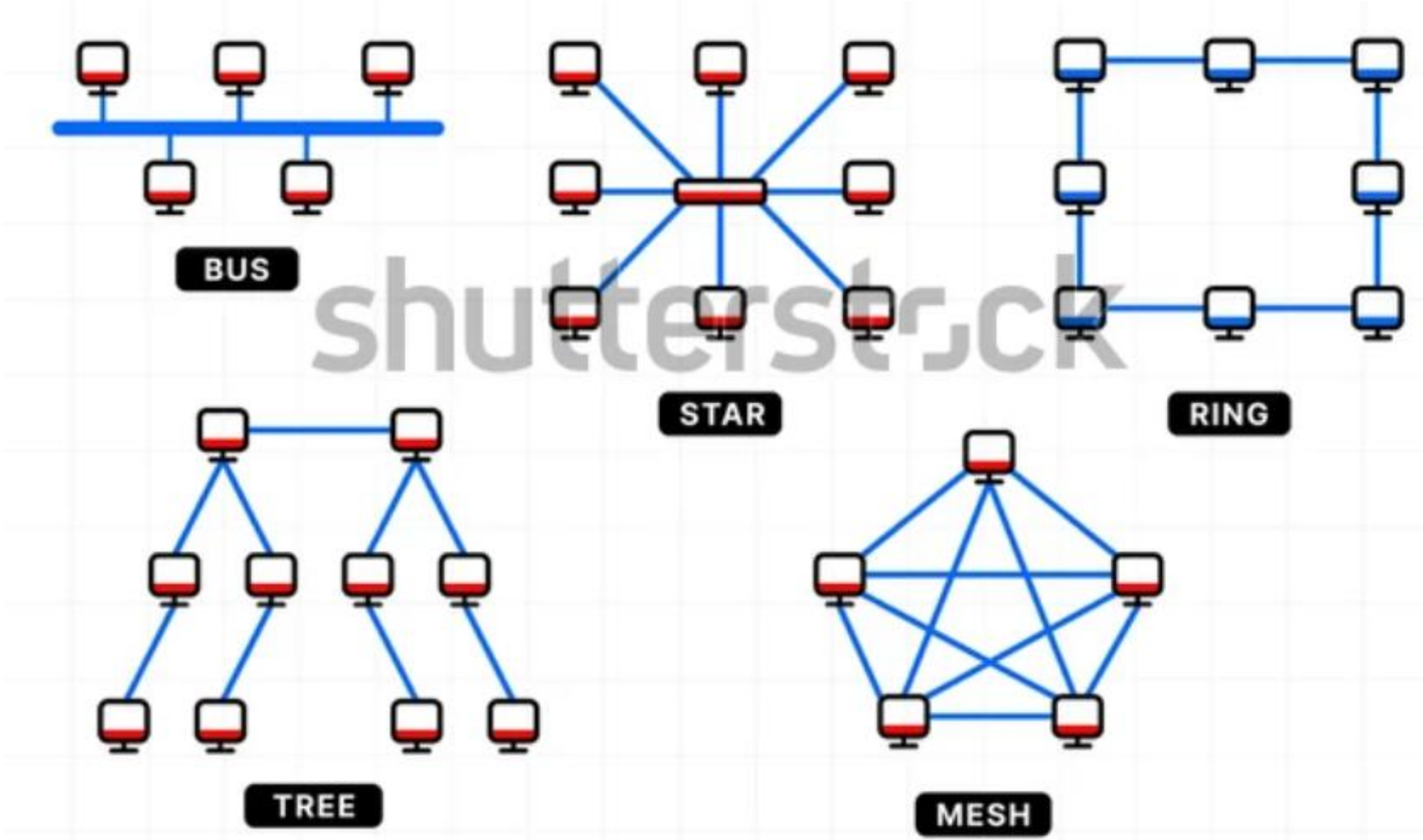

200.1.2.0
200.1.2.128
Subnetting
Further
200.1.2.0
200.1.2.128
200.1.2.192

Topologies

Physical and Logical Topologies

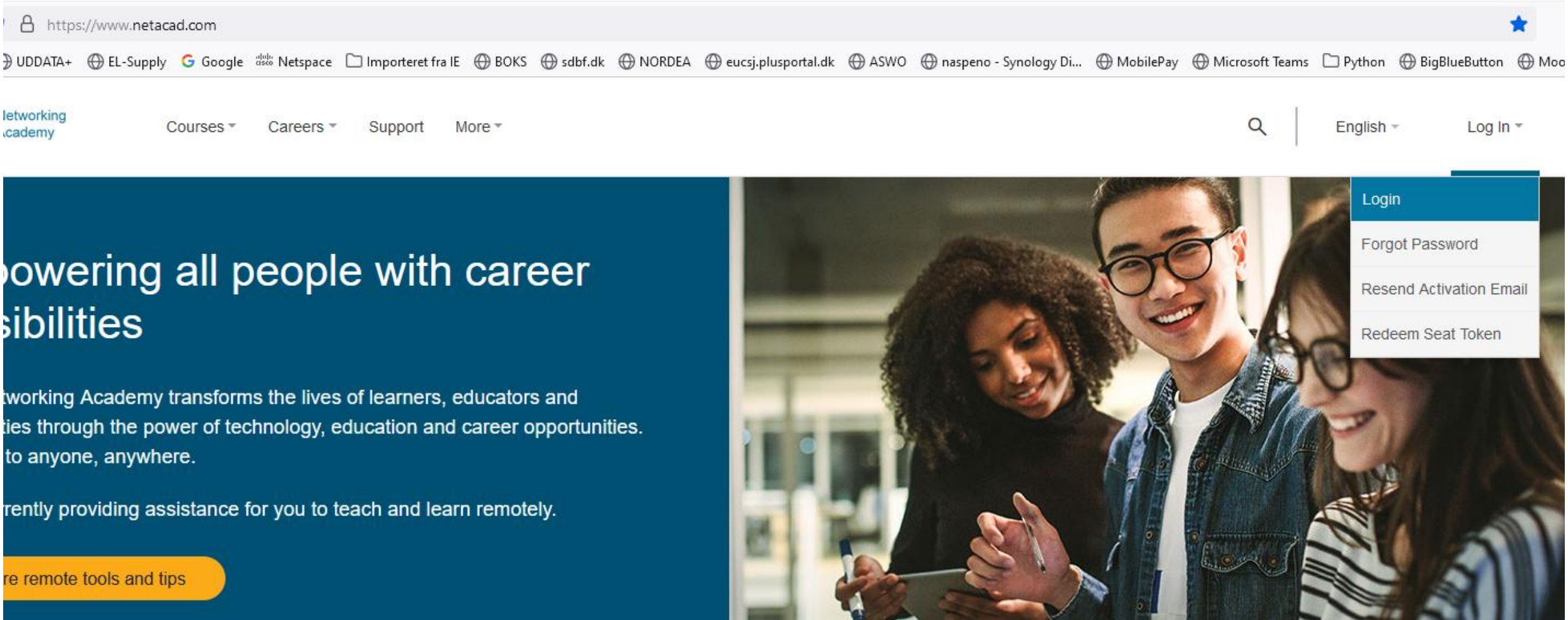


Netværks-topologier



Login www.netacad.com (Cisco)

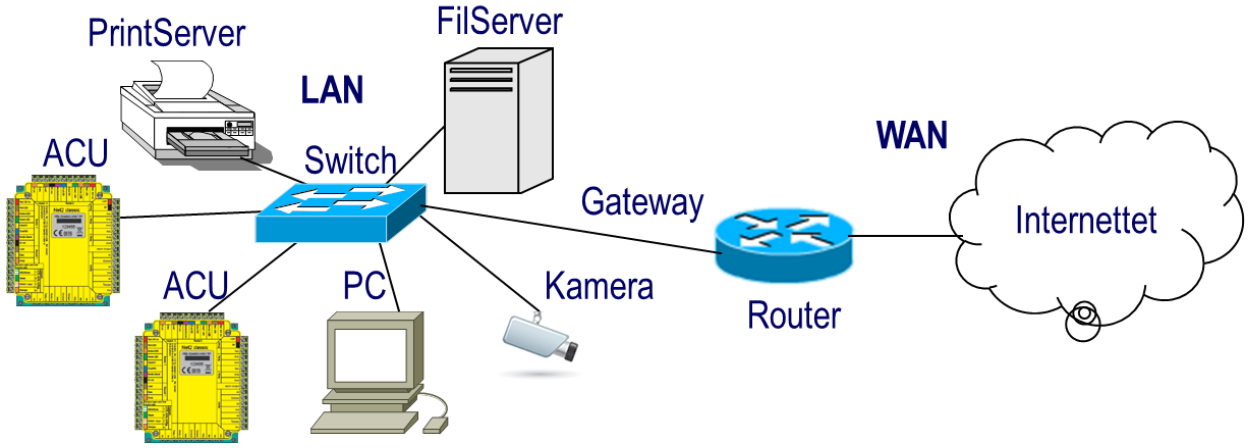
Mail: testpersoncisco8@hotmail.com
Password: **Cykelhjul000***



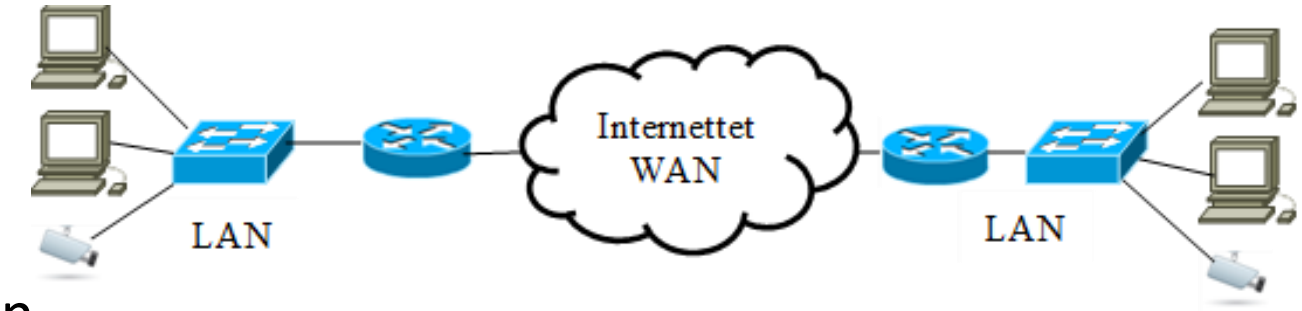

WARRIORS OF THE NET
legal
about
gallery
music
the Movie

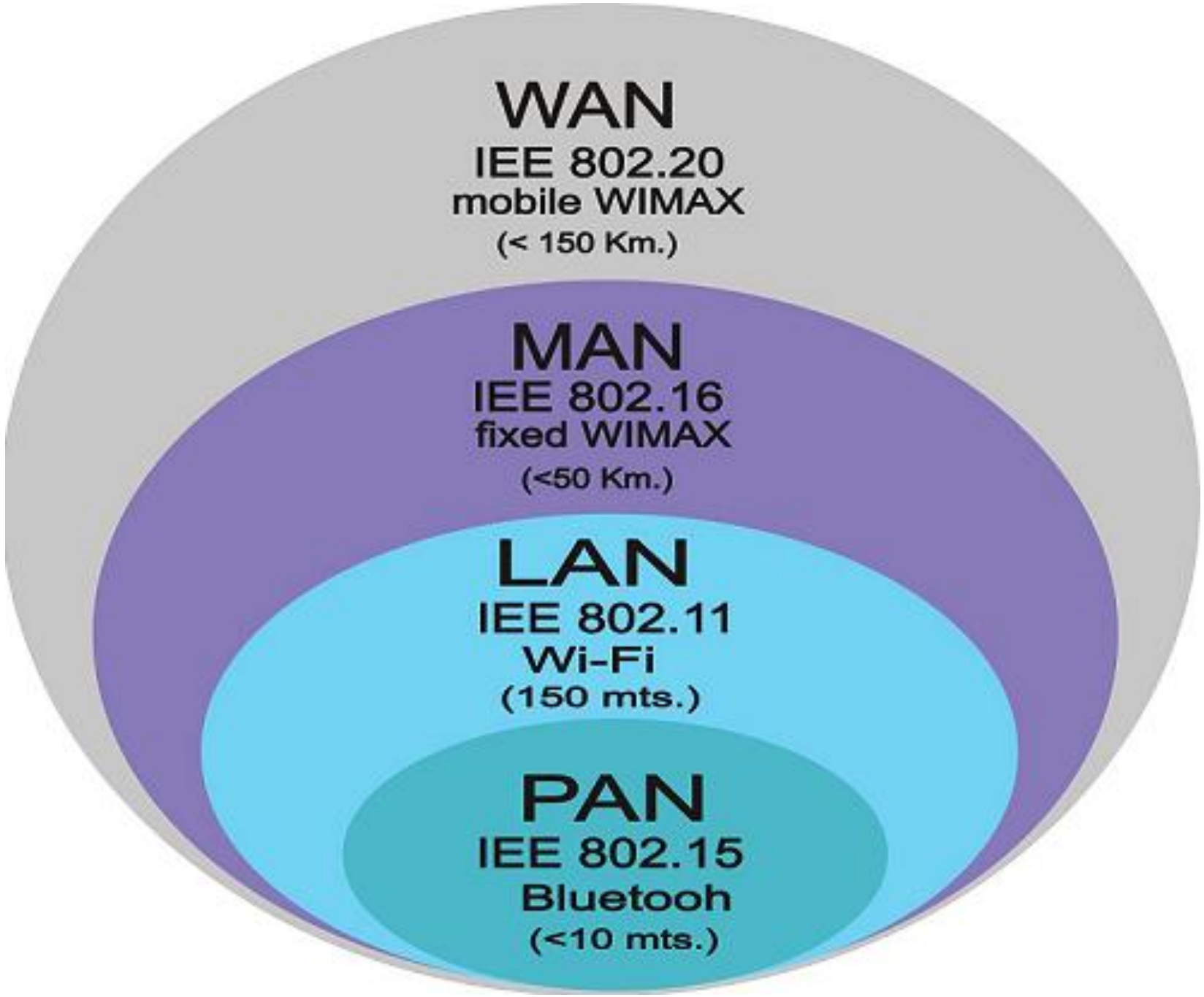
LANs and WANs

- **Local Area Networks**
  - Spans across small geographical area
  - Interconnects end devices
  - Administrated by a single organization
  - Provide high speed bandwidth to internal devices



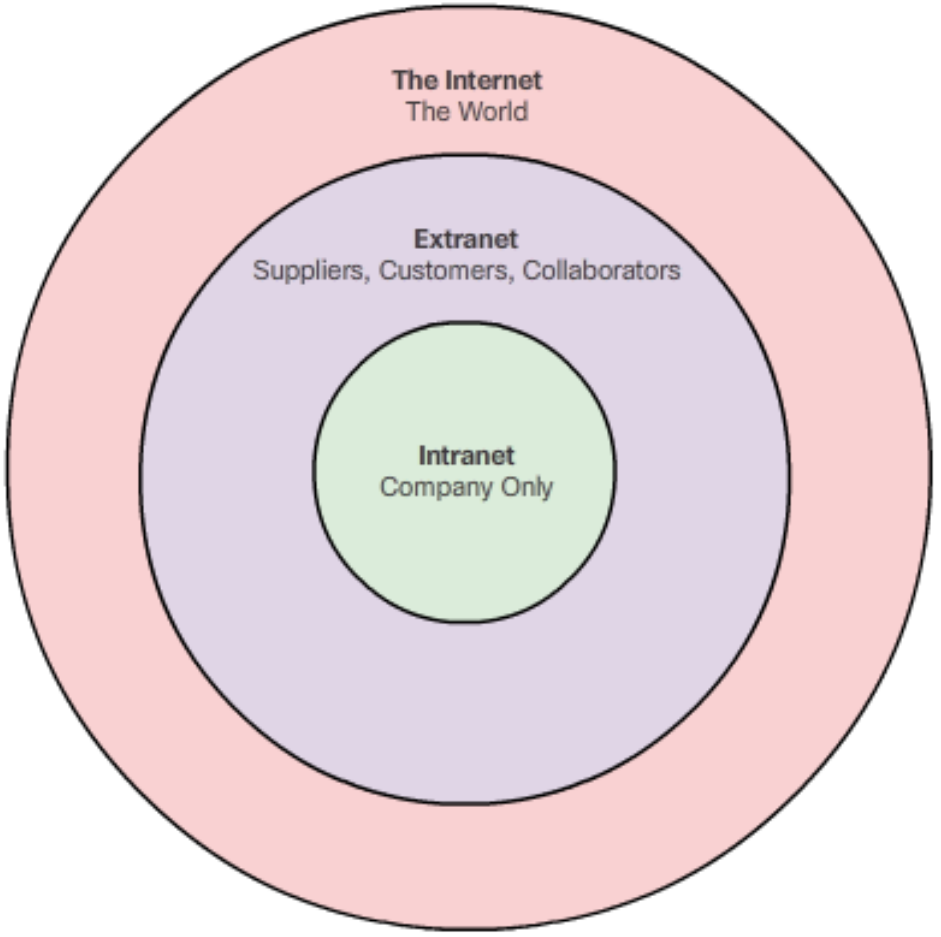
- **Wide Area Networks**
  - Interconnects LAN
  - Administrated by multiple service providers
  - Provide slower speed links between LANS

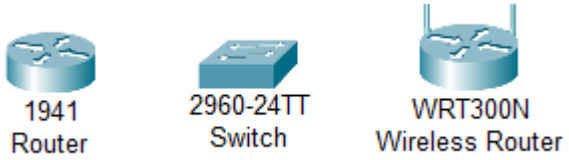



WAN
IEE 802.20
mobile WIMAX
(< 150 Km.)
MAN
IEE 802.16
fixed WIMAX
(<50 Km.)
LAN
IEE 802.11
Wi-Fi
(150 mts.)
PAN
IEE 802.15
Bluetooh
(<10 mts.)

The Internet, Intranets, and Extranets

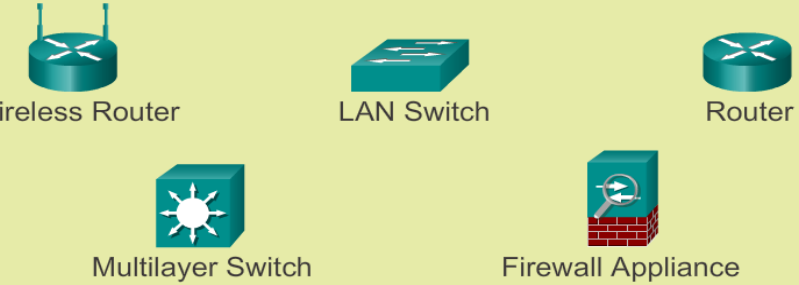
- The Internet
  - Worldwide collection of interconnected networks
  - Not owned by any individual or group
- Intranets and Extranets



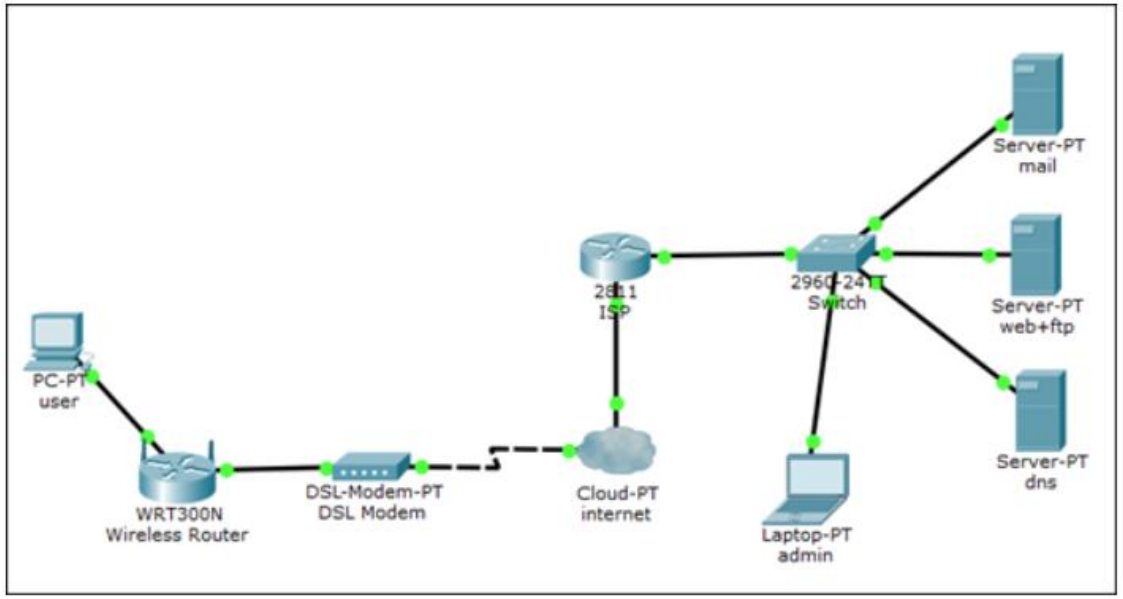


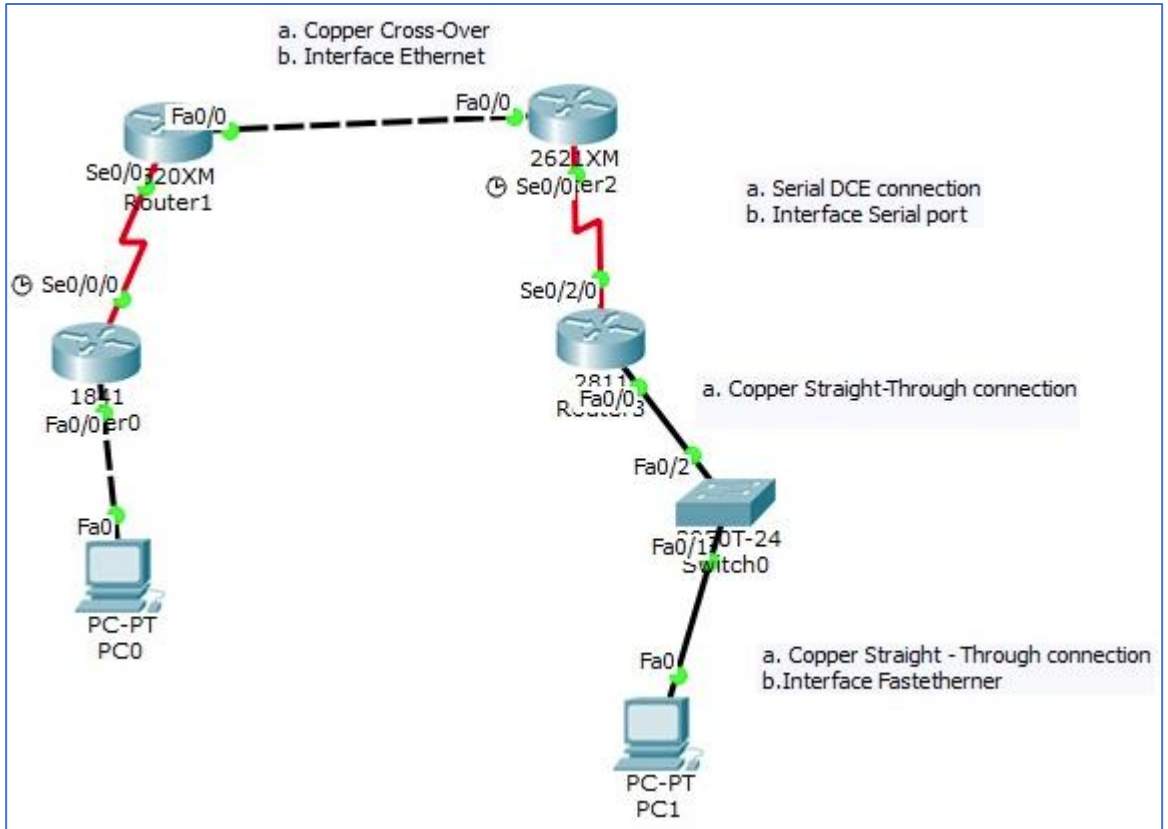
End Devices

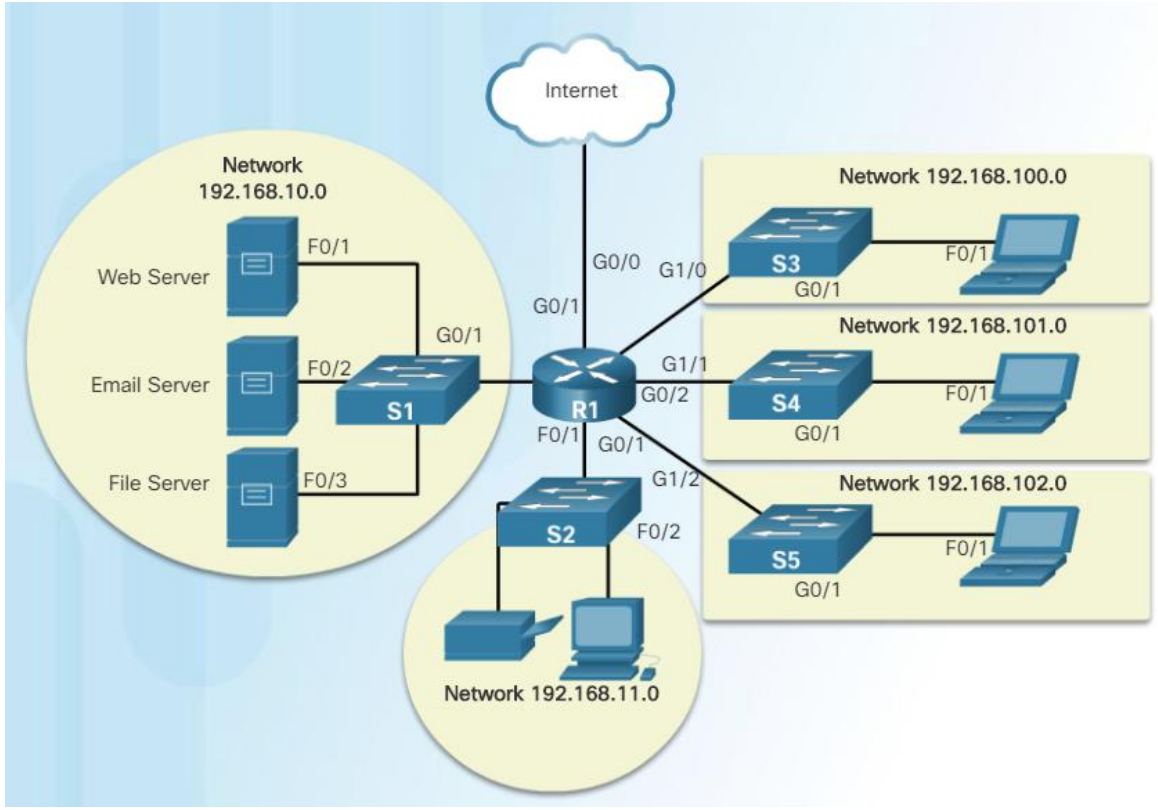
Intermediary Devices

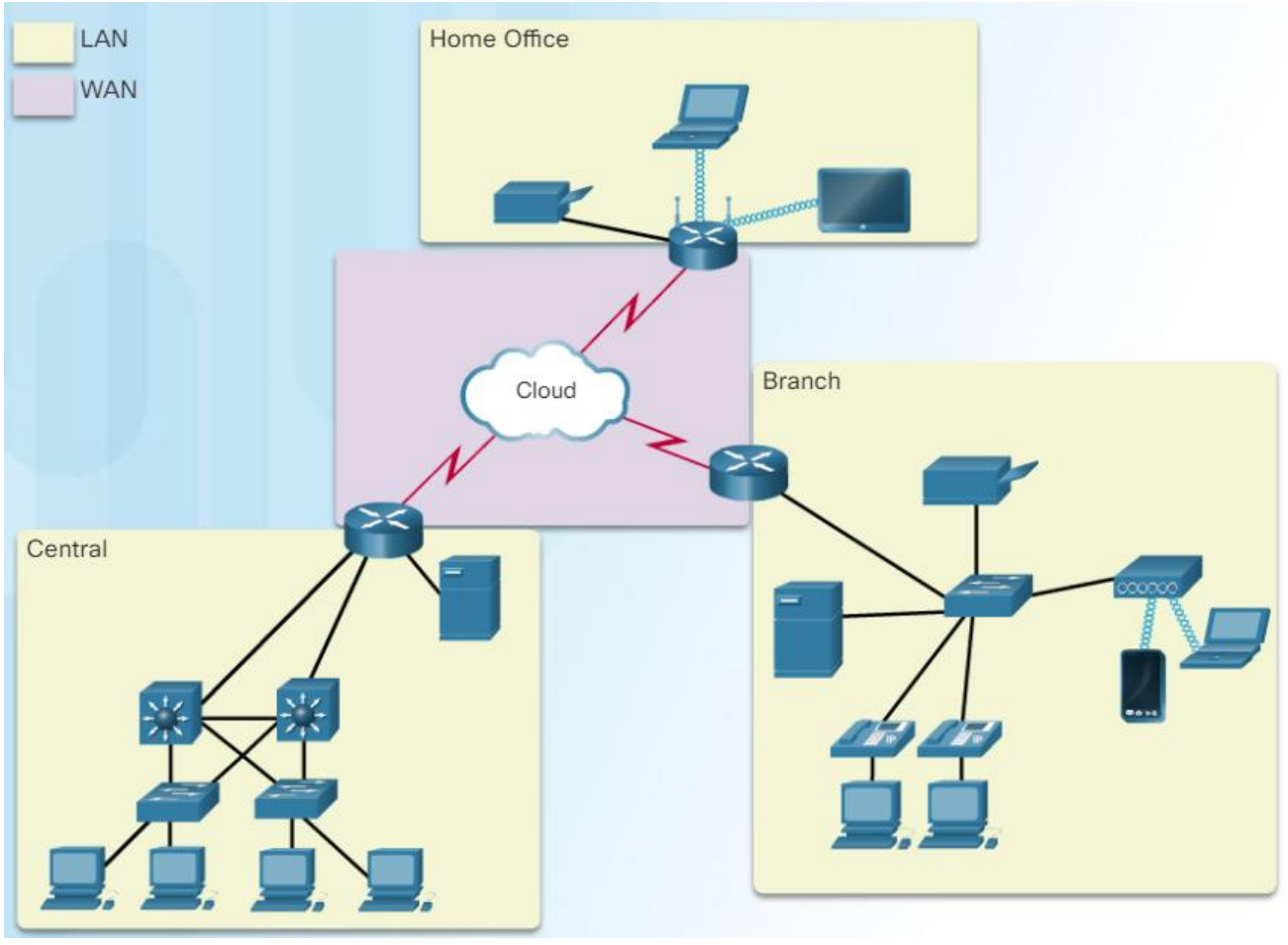


Network Media

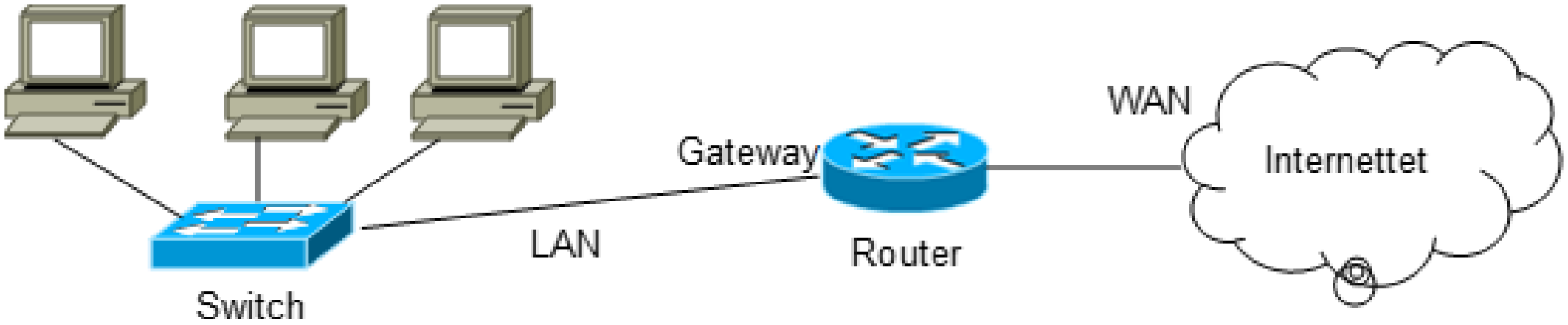




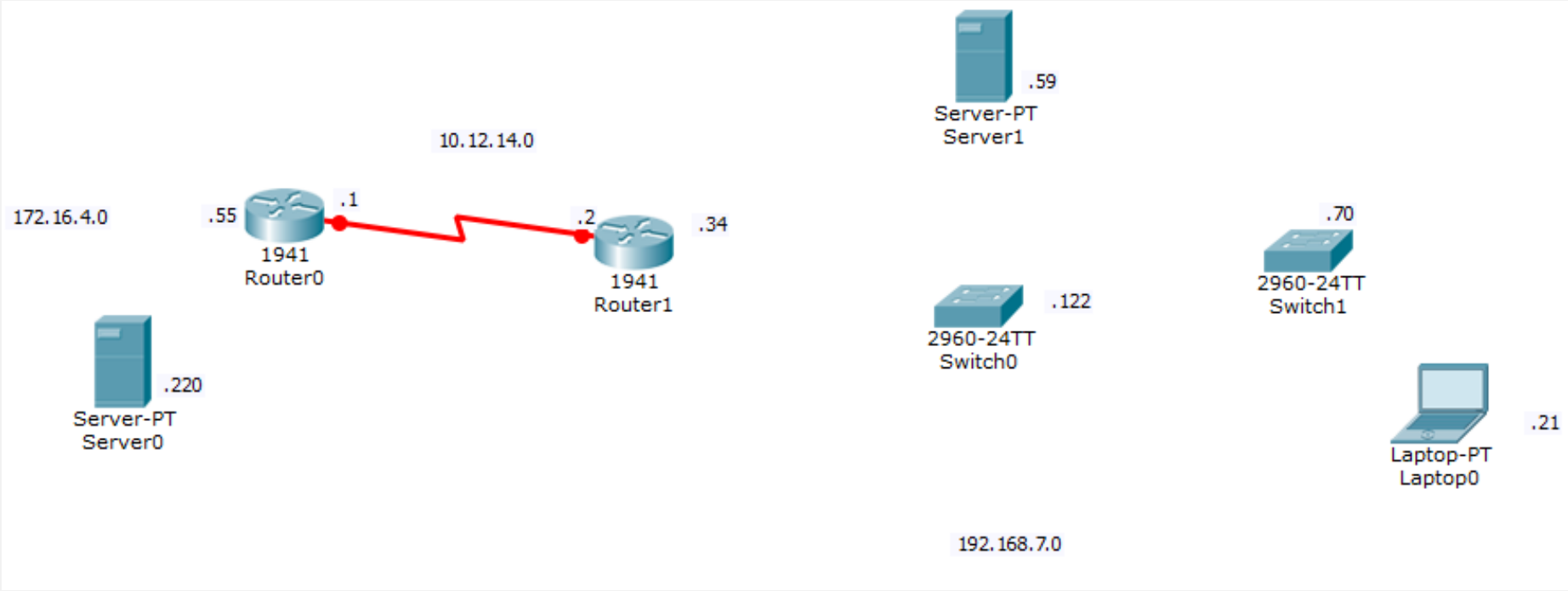

Internet
Network
192.168.10.0
Web Server
Email Server
File Server
F0/1
F0/2
F0/3
S1
G0/1
G0/0
G1/0
G0/1
R1
G1/1
G0/2
F0/1
G0/1
G1/2
S2
F0/2
Network 192.168.11.0
Network 192.168.100.0
S3
F0/1
G0/1
Network 192.168.101.0
S4
F0/1
G0/1
Network 192.168.102.0
S5
F0/1
G0/1


LAN
WAN
Home Office
Cloud
Branch
Central

Gateway

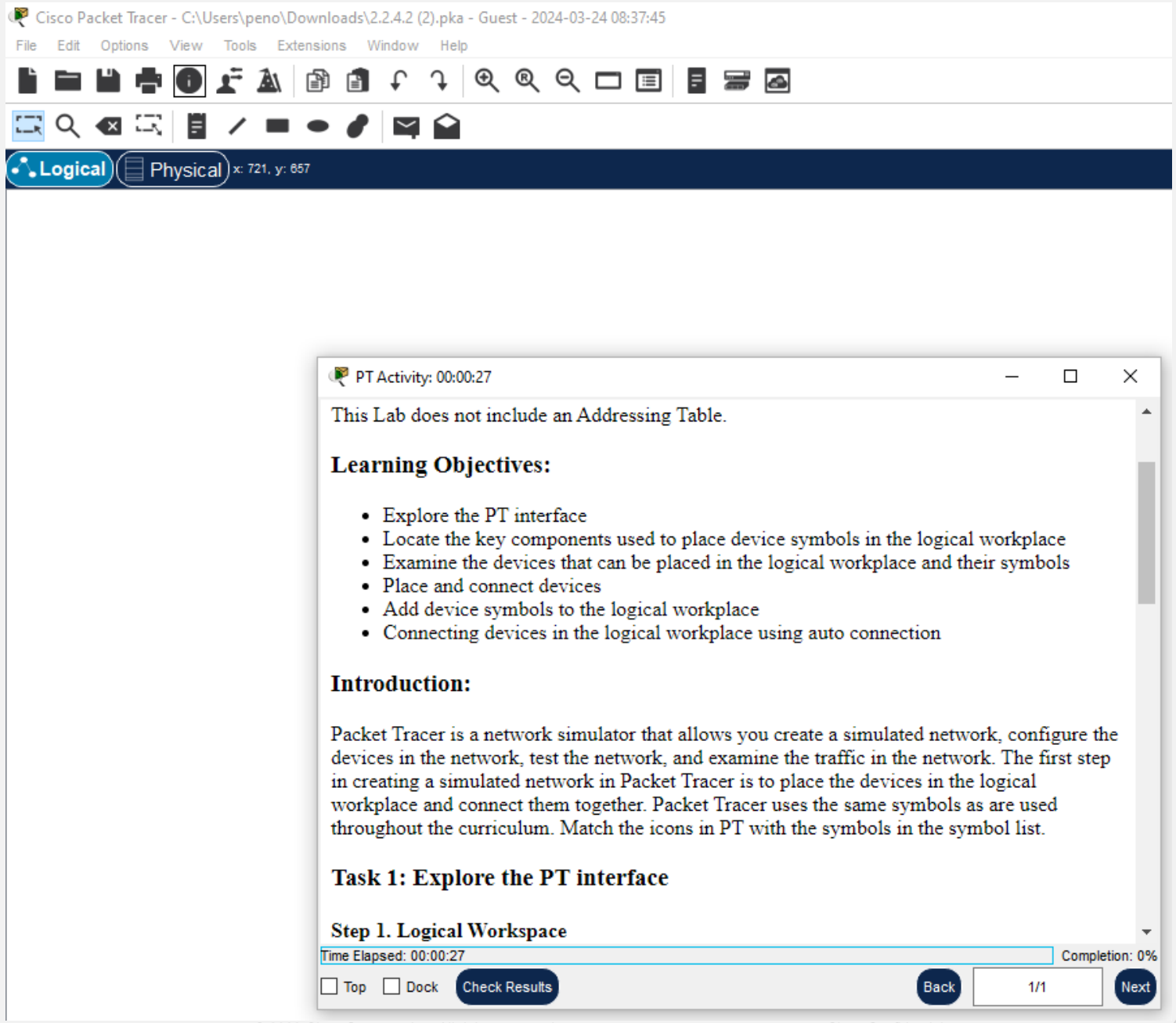


Addressing Devices
Gateway



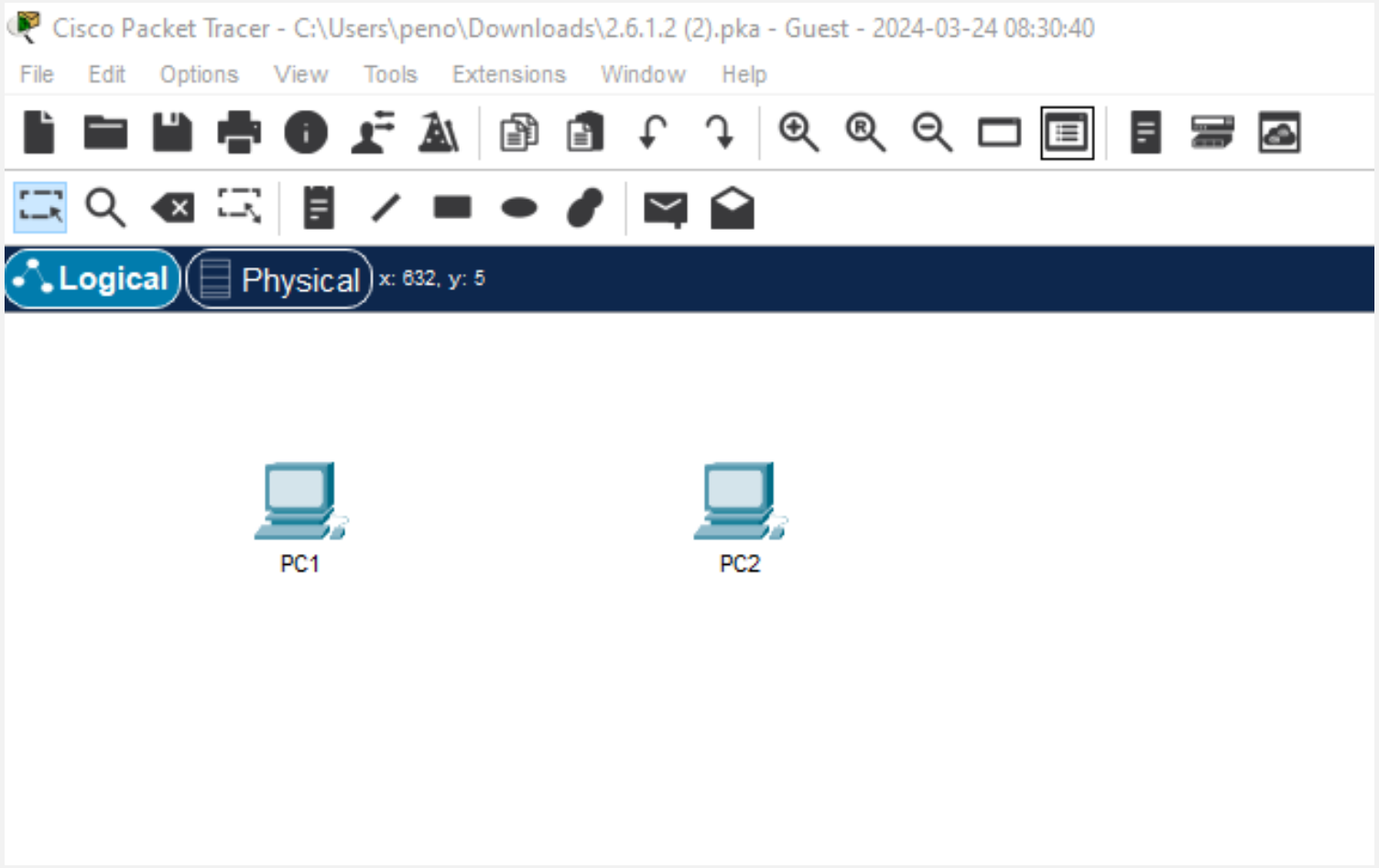
1_Opstart Packet Tracer

Find 5 netværks-enhed til hinanden.
Forbind enhederne med et kabel.



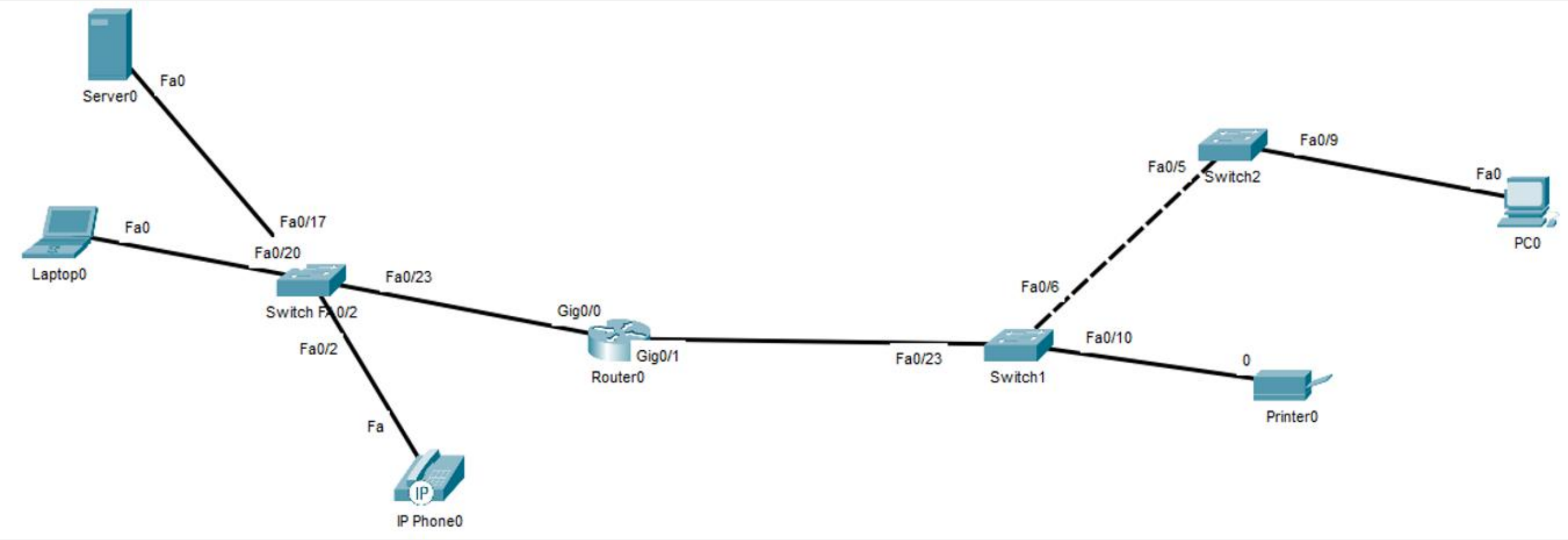
2_Opstart Packet Tracer

Forbind 2 PC´ere med et passende medie.
Giv dem IP-adresser.
Test at de kan pinge til hinanden.



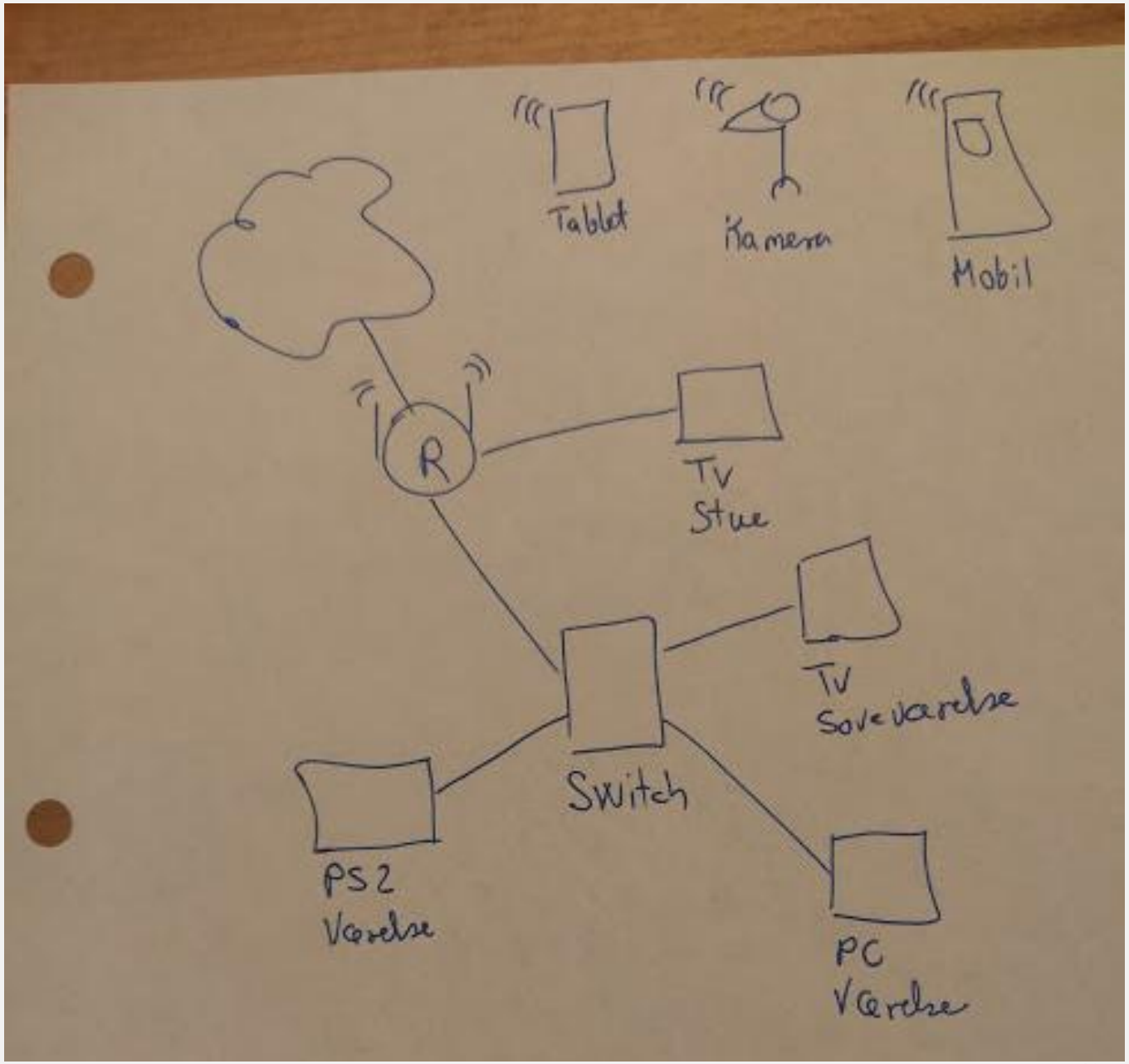
3_Opbyg dette netværk i Packet Tracer

Opbyg dette netværk i Packet Tracer, som en nøjagtig kopi.



4_Eget netværk i Packet Tracer

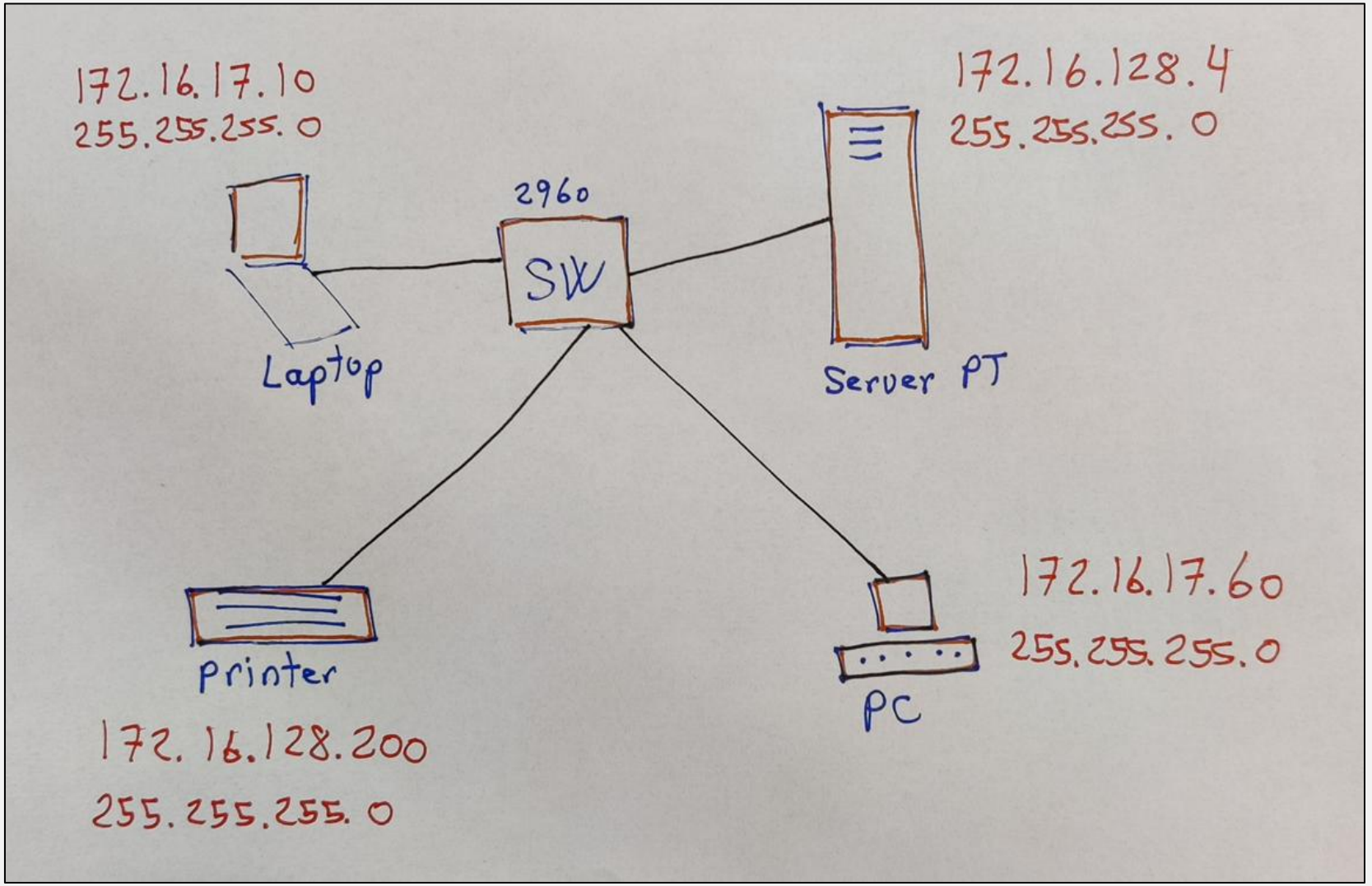
Lav en skitse, og opbyg det i Lav Packet Tracer.
Oplæg ligger i Studie+



- Devices
- Ethernet eller wireless
- ISP
- IP-add ?

5_Fejlfind på netværk

Lav Packet Tracer opgaven.
Test om alle kan pinge alle.
Fix problemet, hvis de ikke kan.



Opgaver hentes i Studie+

- 1_Opstart Packet Tracer (opbyg lille netværk)
- 2_Opstart Packet Tracer (forbind 2 PC til hinanden, og giv dem IP-adresser)
- 3_Opbyg dette netværk i Packet Tracer (som en nøjagtig kopi)
- 4_Hjemme-netværk (Tegn en skitse af egen lejlighed eller hus)
- 5_Fejlfind på netværk (Opbyg i Packet Tracer et netværk. Fejlfind og ret fejl)

Opgaveoversigt » for Per Theen Nørreslet. Filter: Kommunikationsnetværk 2

	Opgavetitel	Hold	Fag
	1_Opstart Packt Tracer	n26h1ele1	Kommunikationsnetværk 2
	2_Opstart Packet Tracer	n26h1ele1	Kommunikationsnetværk 2
	3_Opbyg dette netværk i Packet Tracer	n26h1ele1	Kommunikationsnetværk 2
	4_Eget netværk i Packet Tracer	n26h1ele1	Kommunikationsnetværk 2
	5_Fejlfind på netværk	n26h1ele1	Kommunikationsnetværk 2

Gem pka-opgaven lokalt (f.eks i Overførsel)
og upload til Studie+

TEKNIQ
INSTALLATØRERNES ORGANISATION

DANSK EL-FORBUND

Den Store Blå

ELEKTRIKERUDDANNELSEN

H1 data

2. dag

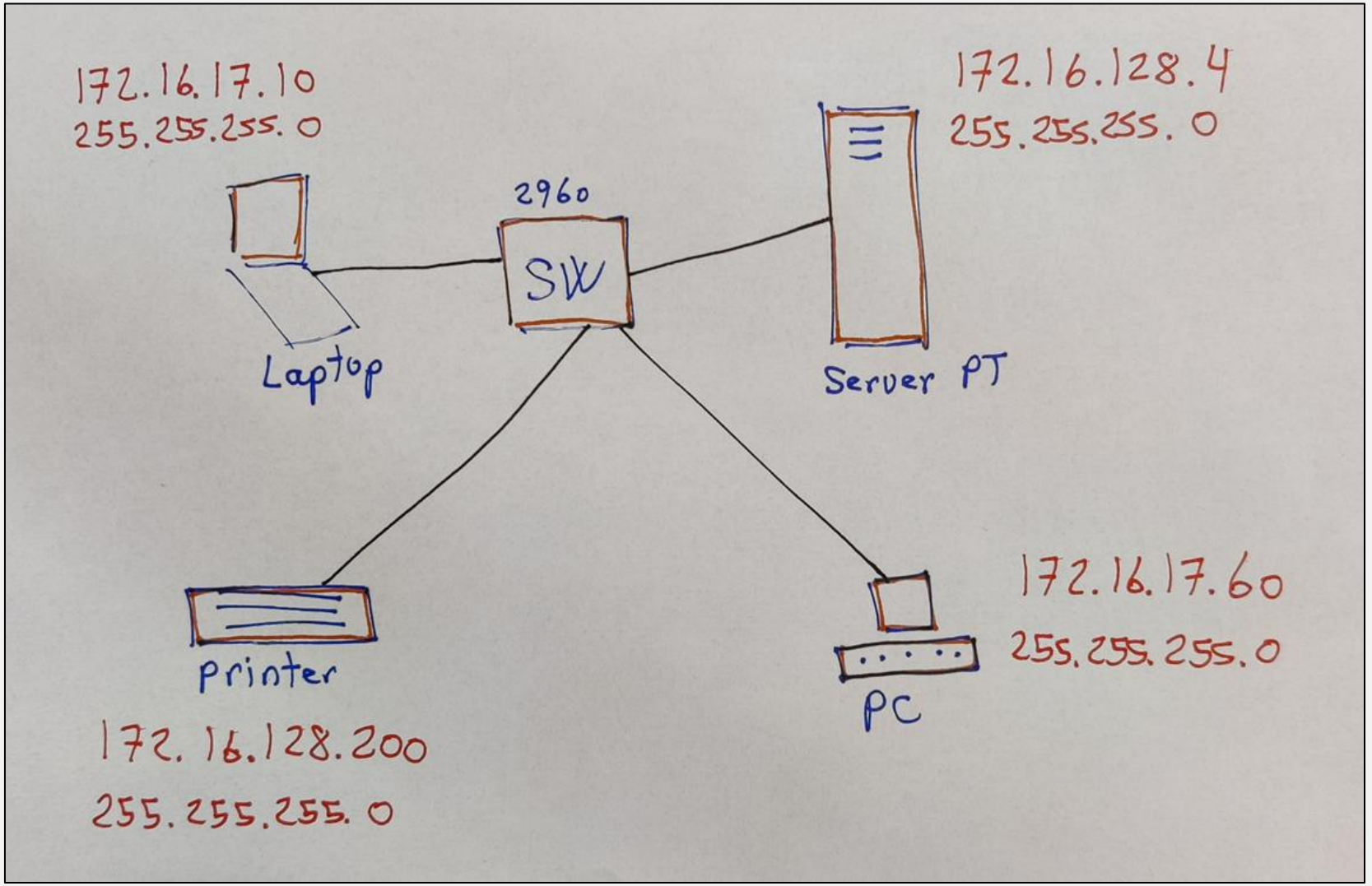
	H1
Fre 23/1	TEORI: - **IP-adresser** (klasser-private-public-subnetmask-gateway-na-fha-lha-bc-nat) - **Topologier** (lan-wan-man-pan-internet-extranet-intranet) - **Netværkskomponenter** (switch-router-wap-repeater-modem-hjemmerouter) PRAKTIK: - **Packet Tracer øvelser**
Man 26/1	TEORI: - **Repetition** - **Netværkskommunikation** (isp-medier-ip-opsætning) - **Protokoller** (dns-dhcp) - **OSI-modellen** - **Test af netværk** (ipconfig-ping) - **Trådløst netværk** PRAKTIK: - **Hjemmerouter**
Tirs 27/1	TEORI: - **Repetition** - **Besøg af DEF 10.00 – 11.30** - **Adresseplaner** PRØVER: - **Opsætning af trådløs router og mindre netværk** - **Oprydning** - **Teoretisk prøve**

Udfyld felterne med fagudtrykket i løbet af undervisningen:

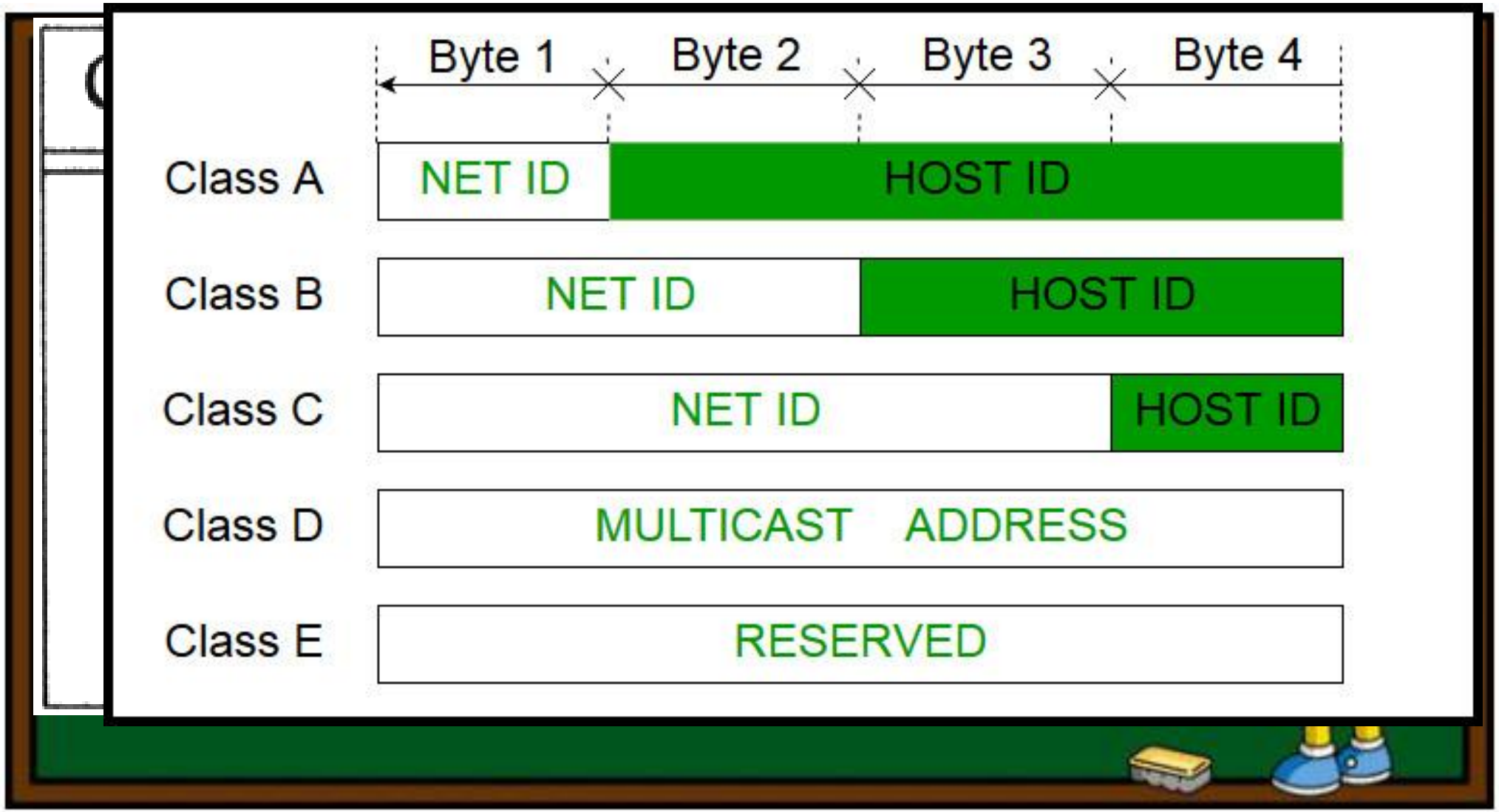
	Automatisk uddeling af IP-adresser til enheder på netværket.
	Viser alle netværksdetaljer for din computer (IP, DNS og Gateway).
	Tjekker om en anden enhed/hjemmeside svarer, og hvor hurtigt.
	Viser ruten (alle hop) pakker tager til en destination.
	Internettets telefonbog, der oversætter navne (google.dk) til IP-adresser.
	Viser få oplysninger om netværksdetaljerne på din computer.
	Værktøj til at finde DNS-oplysninger og tjekke IP-adresser for et domæne.
	Din internetudbyder (f.eks. YouSee, Norlys), der giver dig adgang til nettet.
	En unik identifikations-adresse knyttet til et netkort (fx WiFi eller Ethernet) på en PC.

5_Fejlfind på netværk

Lav Packet Tracer opgaven.
Bemærk UM.
Test om alle kan pinge alle.
Fix problemet, hvis de ikke kan.



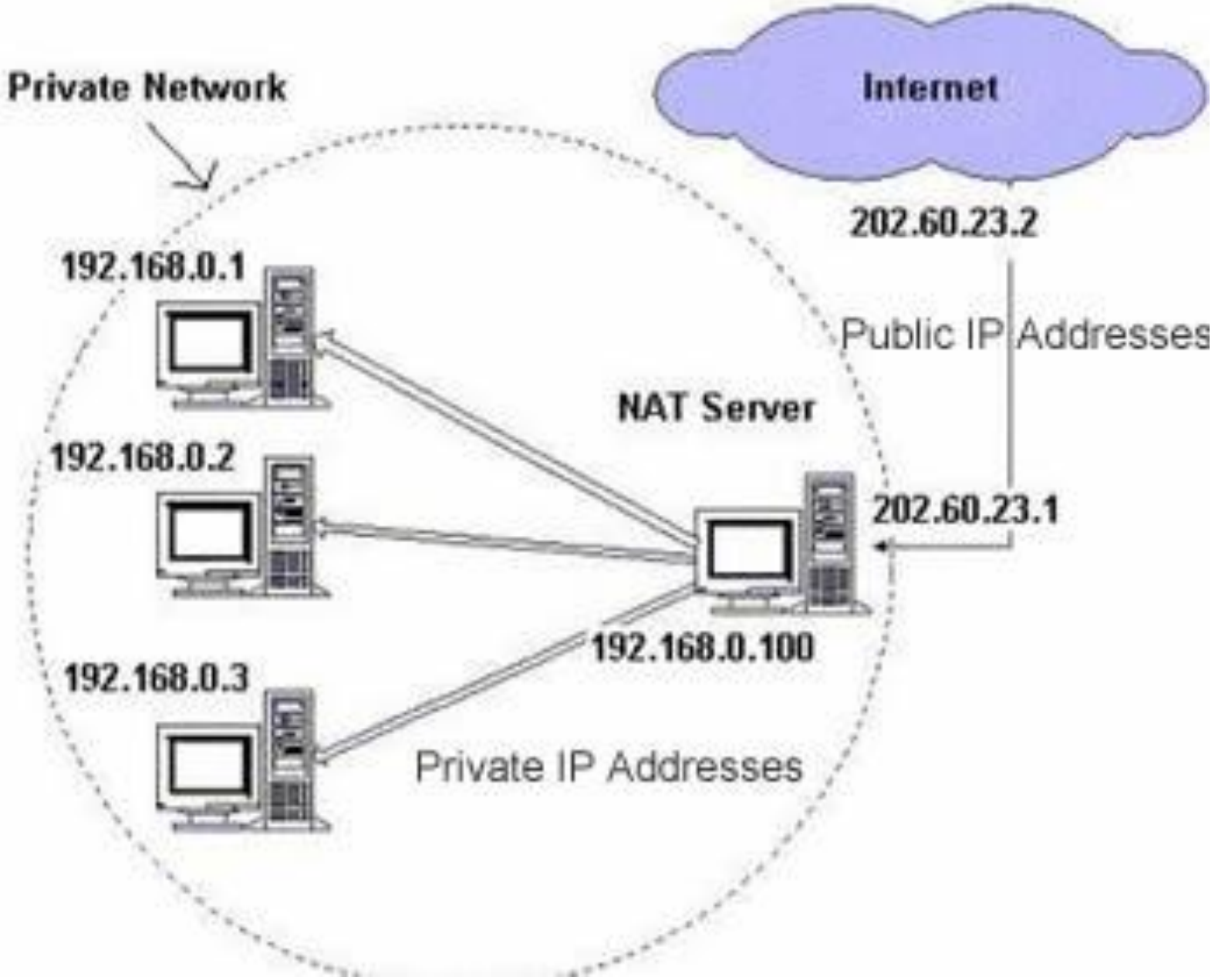
Repetition:


Byte 1
Byte 2
Byte 3
Byte 4
Class A
NET ID
HOST ID
Class B
NET ID
HOST ID
Class C
NET ID
HOST ID
Class D
MULTICAST ADDRESS
Class E
RESERVED

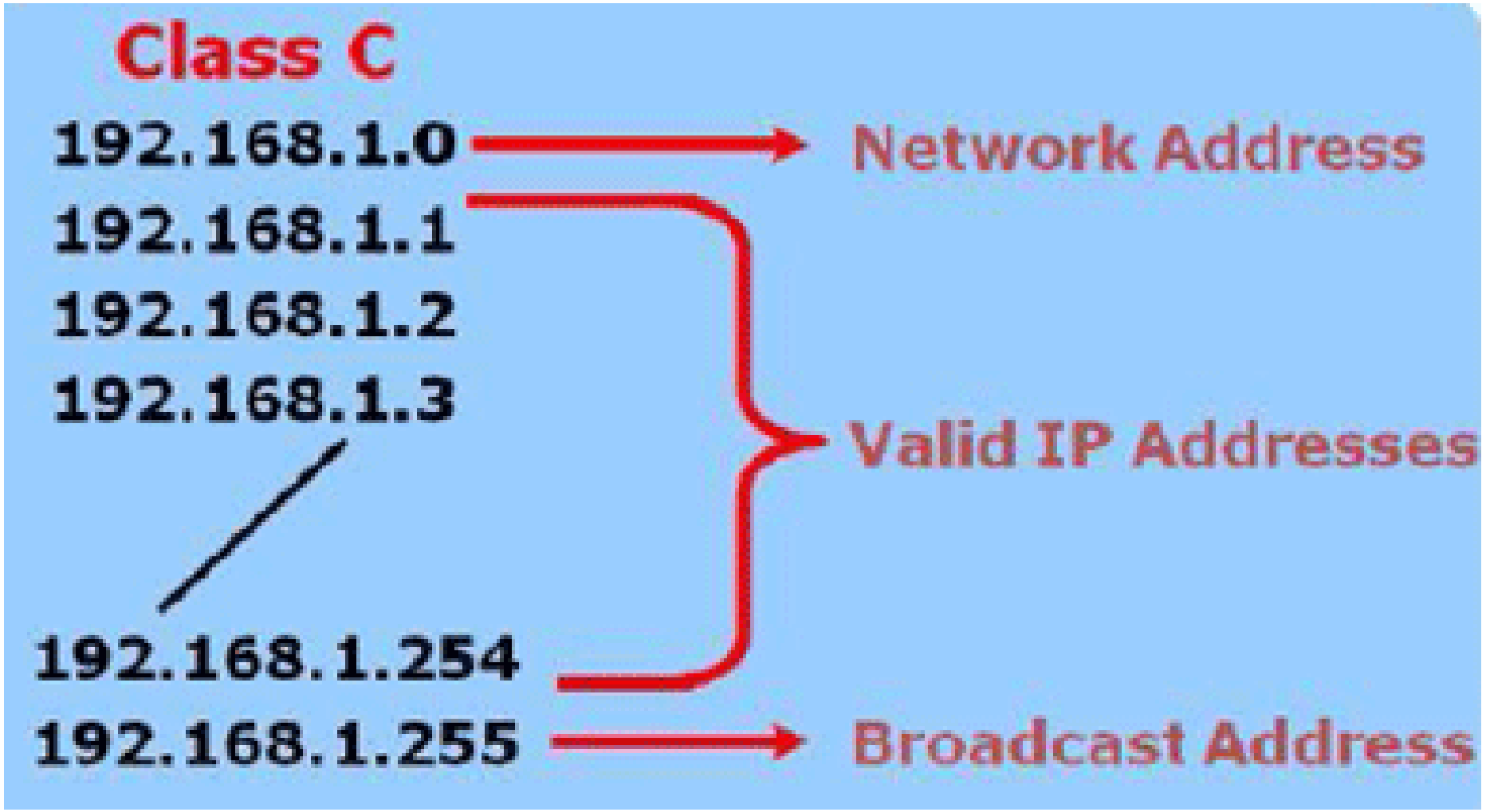
Repetition:

Address Class	Value in First Octet	Classful Mask (dotted decimal)	Classful Mask (prefix notation)
A	1 - 126	255.0.0.0	/8
B	128 - 191	255.255.0.0	/16
C	192 - 223	255.255.255.0	/24
D	224 - 239	N/A	N/A
E	240 - 255	N/A	N/A

Repetition:

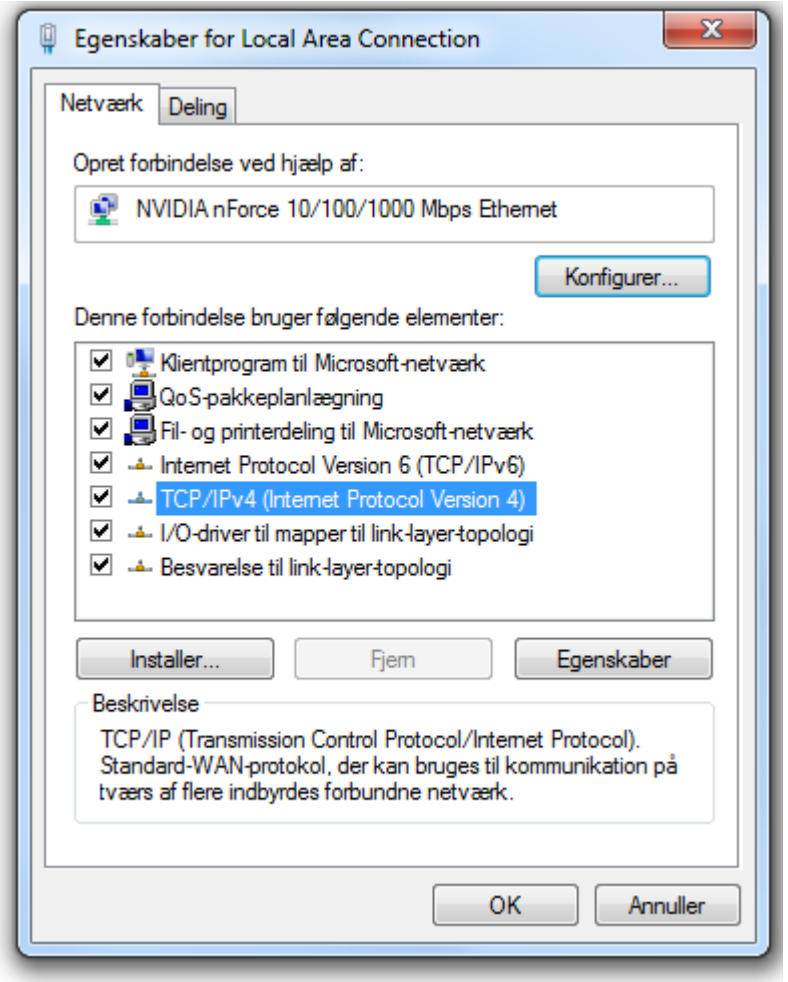

Private Network
Internet
202.60.23.2
192.168.0.1
Public IP Addresses
NAT Server
192.168.0.2
202.60.23.1
192.168.0.100
192.168.0.3
Private IP Addresses

Repetition:

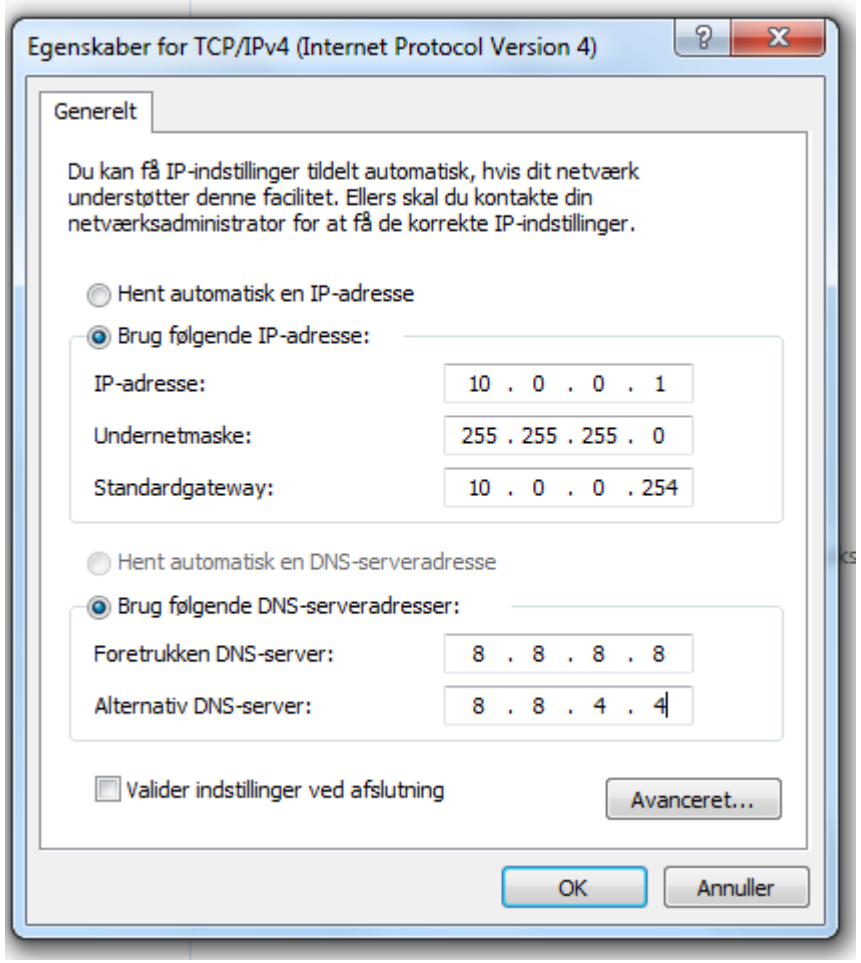

Class C
192.168.1.0
Network Address
192.168.1.1
192.168.1.2
192.168.1.3
Valid IP Addresses
192.168.1.254
192.168.1.255
Broadcast Address

Repetition:

LAN Interface Properties



Configuring a Static IPv4 Address



Repetition:

IP Address: 192 . 168 . 100 . 255 ← Broadcast Address

Subnet Mask: 255 . 255 . 255 . 0

Repetition:

Class – Private/Public – Subnetmask ?

110.16.80.5

10.25.60.203

200.41.101.3

110.16.80.5

191.241.6.88

192.168.252.11

WAN IP-adresser

A	0.0.0.0 – 127.255.255.255 /8
B	128.0.0.0 – 191.255.255.255 /16
C	192.0.0.0 – 223.255.255.255 /24

LAN IP-adresser

A	10.0.0.0 – 10.255.255.255 /8
B	172.16.0.0 – 172.31.255.255 /12
C	192.168.0.0 – 192.168.255.255 /24

Er disse to IP-adresser i samme netværk?

192.168.80.40

192.168.11.200

13.45.11.251

13.26.72.33

191.17.59.177

191.17.48.177

221.22.54.81

221.22.103.7

144.60.22.40

144.61.22.211

Host-A har en IPv4 adresse og en subnetmaske: **214.61.60.49 255.255.255.0.**

Hvilke af nedenstående adresser, er på samme netværk som Host-A?(flere muligheder)?

I. 214.61.60.200

II. 214.67.30.11

III. 214.61.60.1

IV. 214.214.77.40

V. 214.88.6.6.65

Hvad er FHA for : **114.11.120.63 255.0.0.0.**

I. 114.11.0.1

II. 114.0.0.1

III. 114.11.120.0

IV. 114.0.120.64

V. 114.0.0.0

Hvilken klasse hører **10.255.88.41/16 til**?

I. Class A

II. Class B

III. Class C

IV. Class D

V. Class E

Repetition:

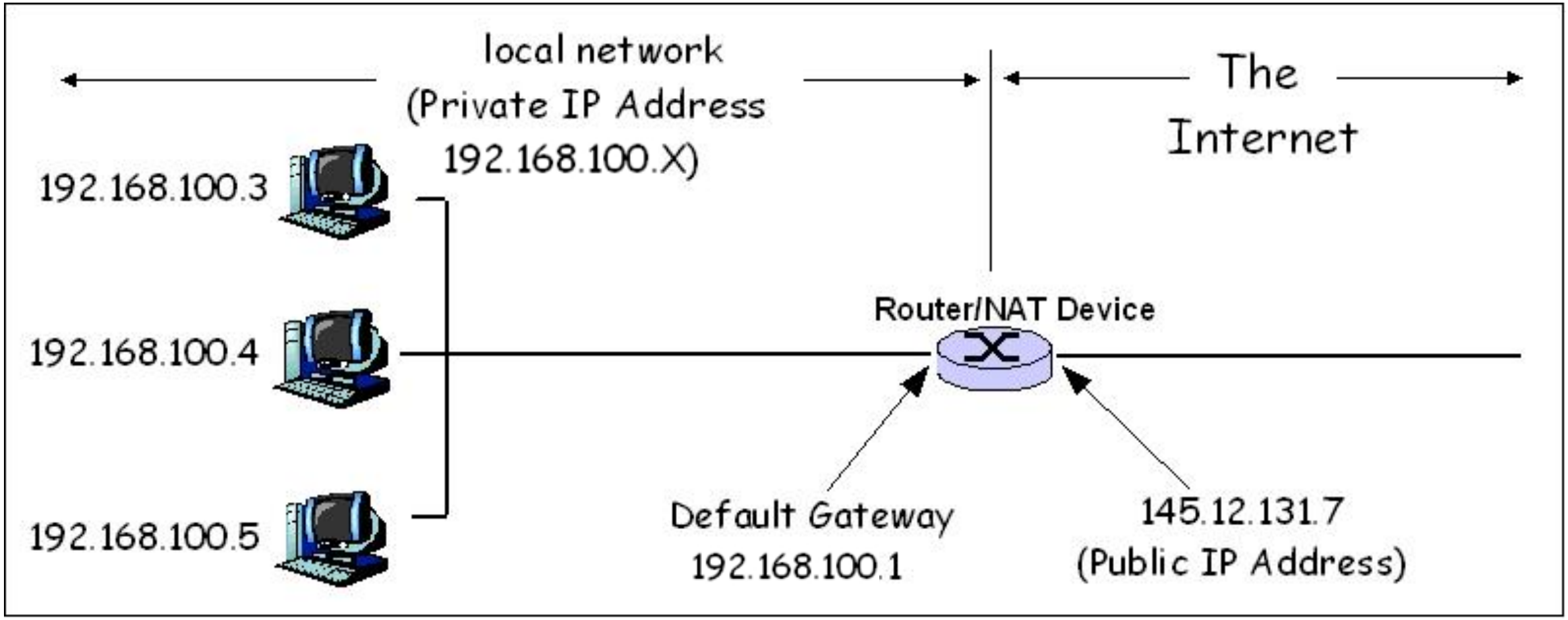
88.14.170.55/8	
NA	
FHA	
LHA	
BC	

Repetition:

Subnetmaske (Decimal)	Subnetmaske (Binær)	Præfix
255.255.255.0		
	11111111.00000000.00000000.00000000	
		/16

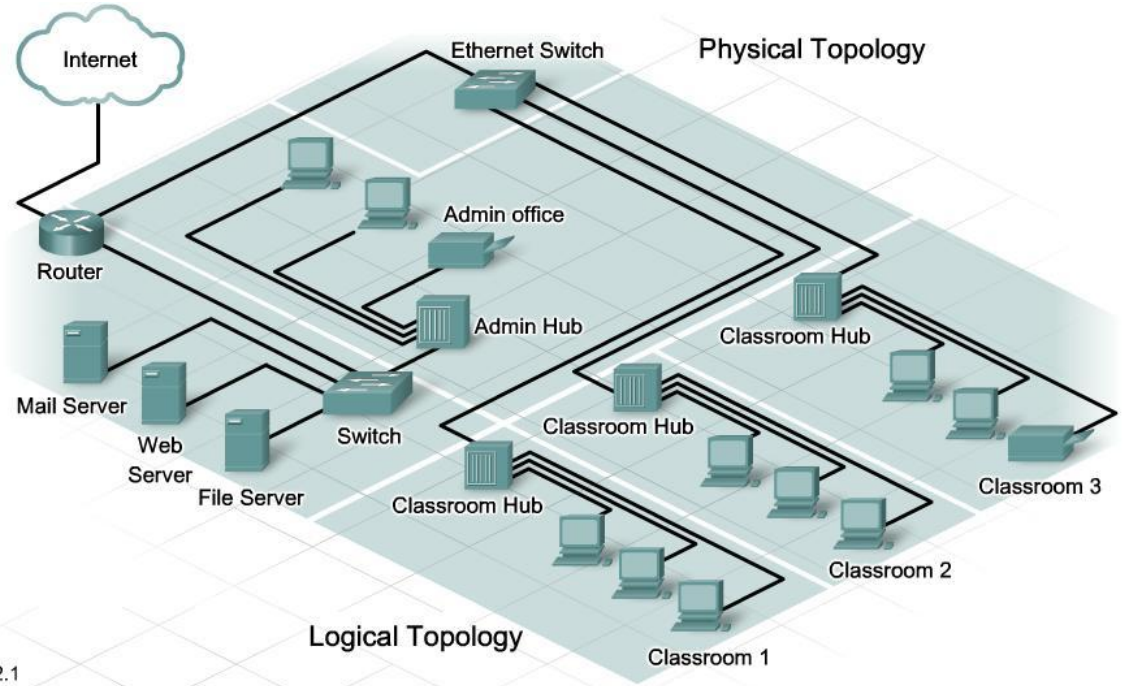
Repetition:

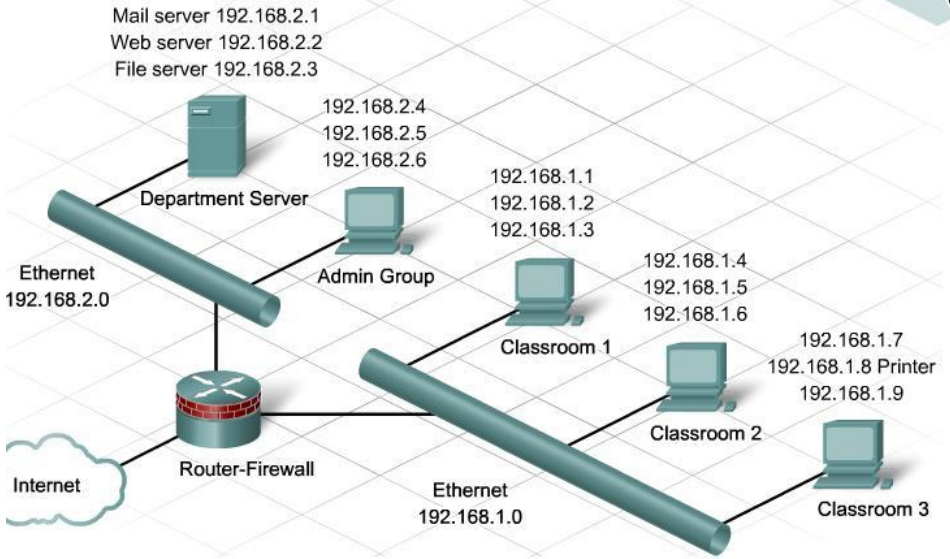
NAT (**N**etwork **A**ddress **T**ranslation)



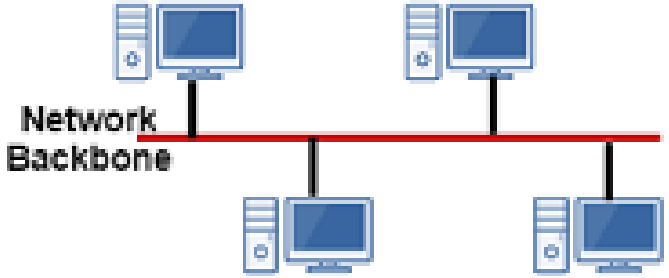
Repetition:

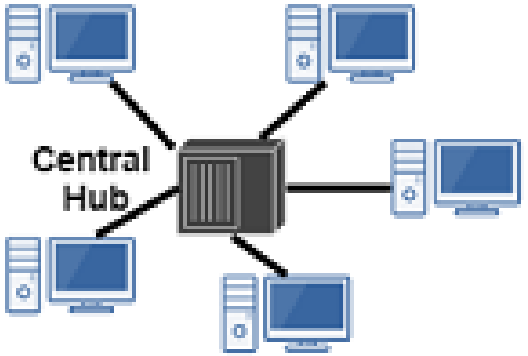
Logical and Physical View

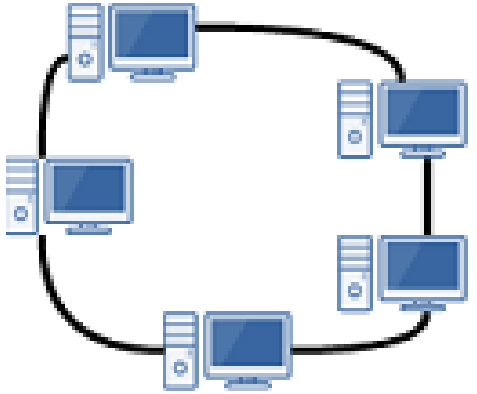


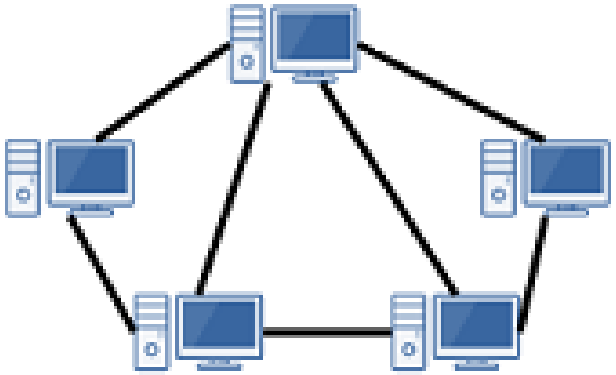


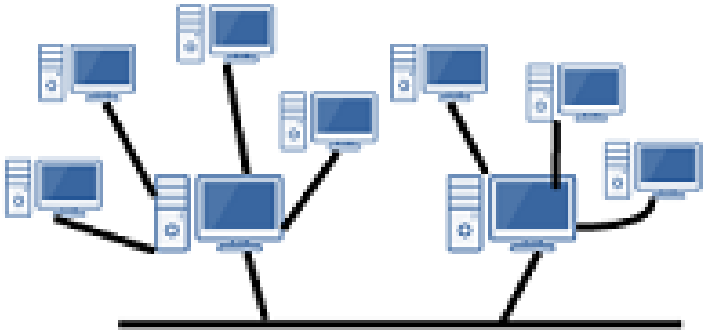
Repetition:



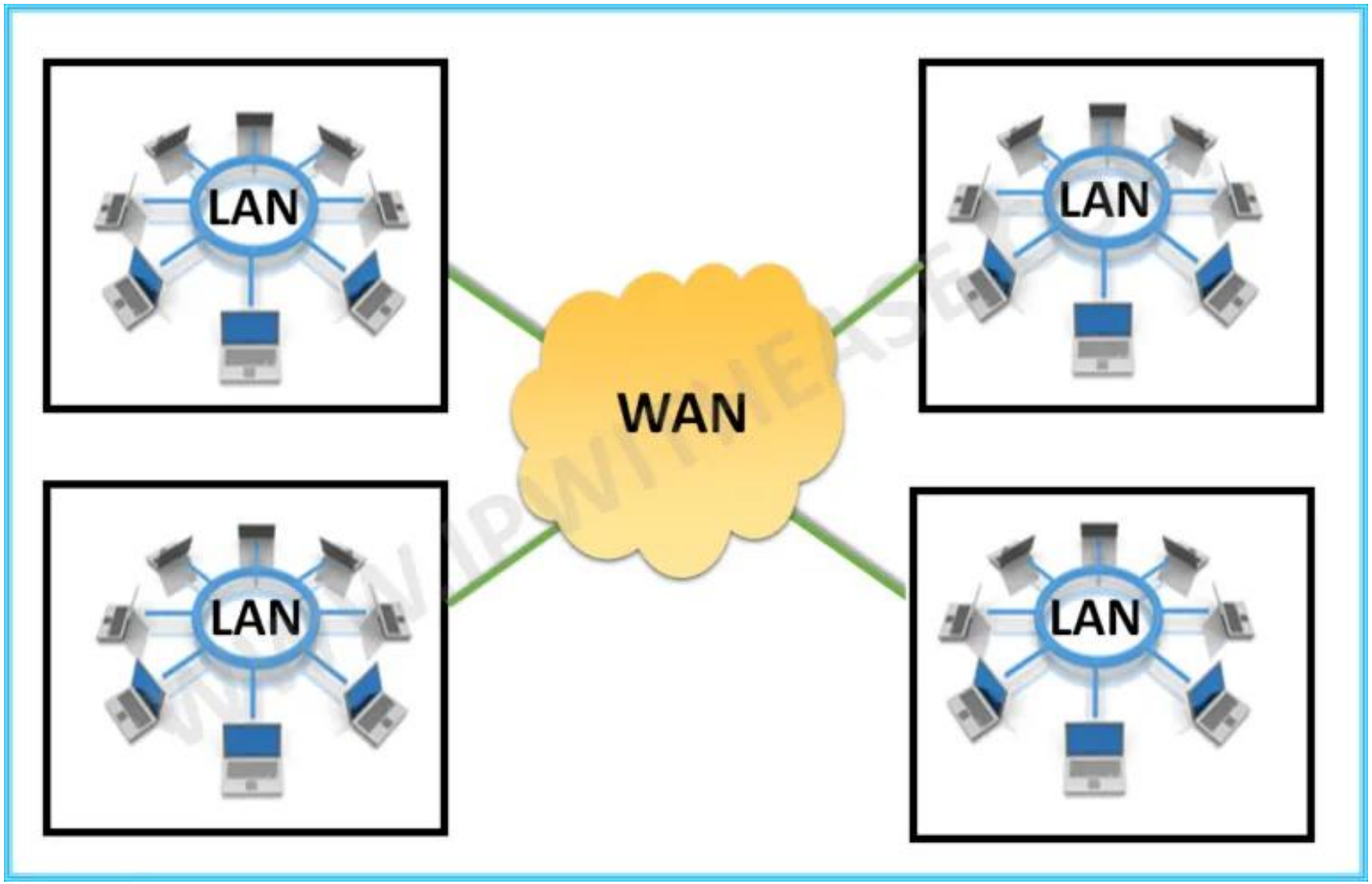




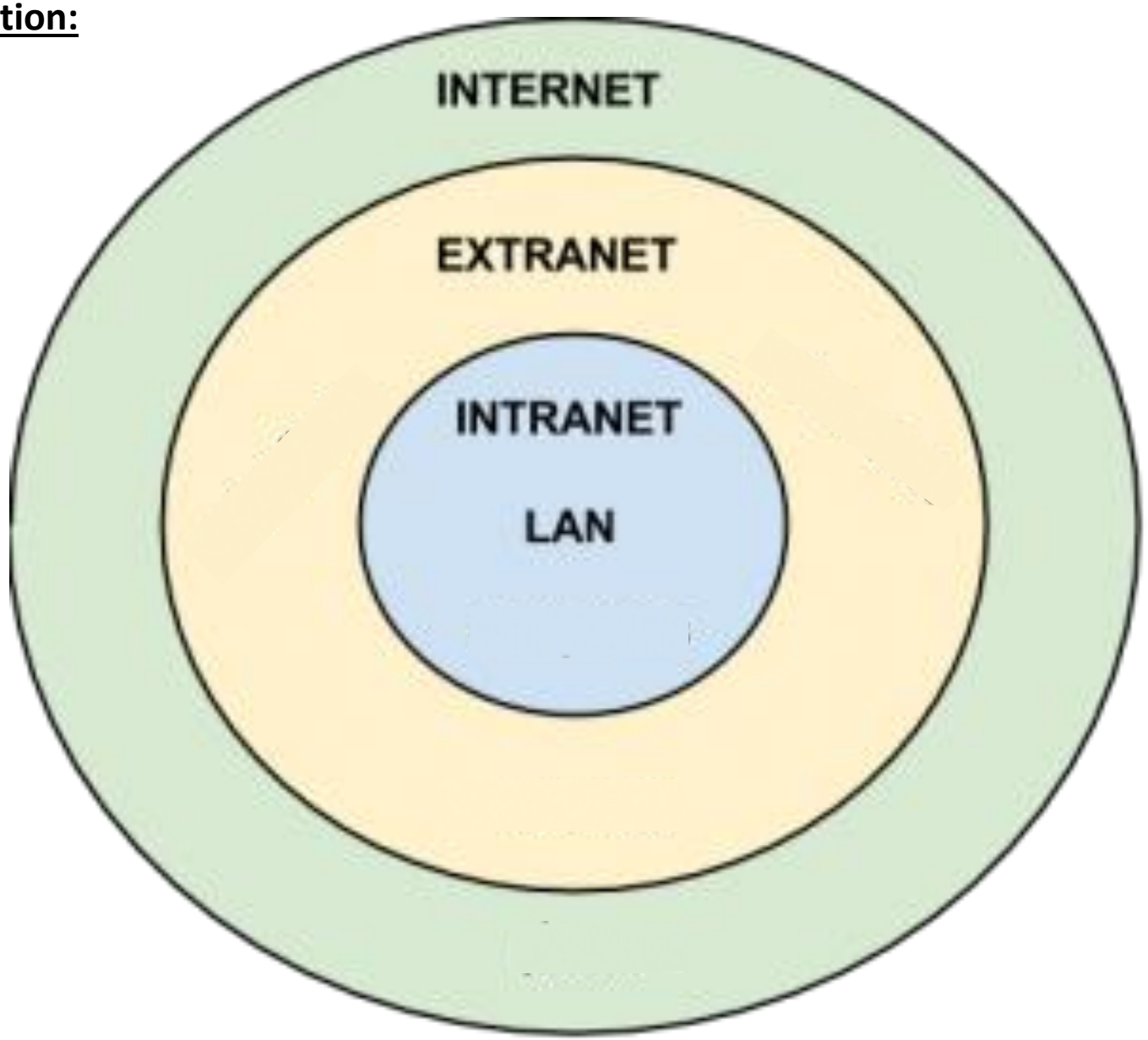




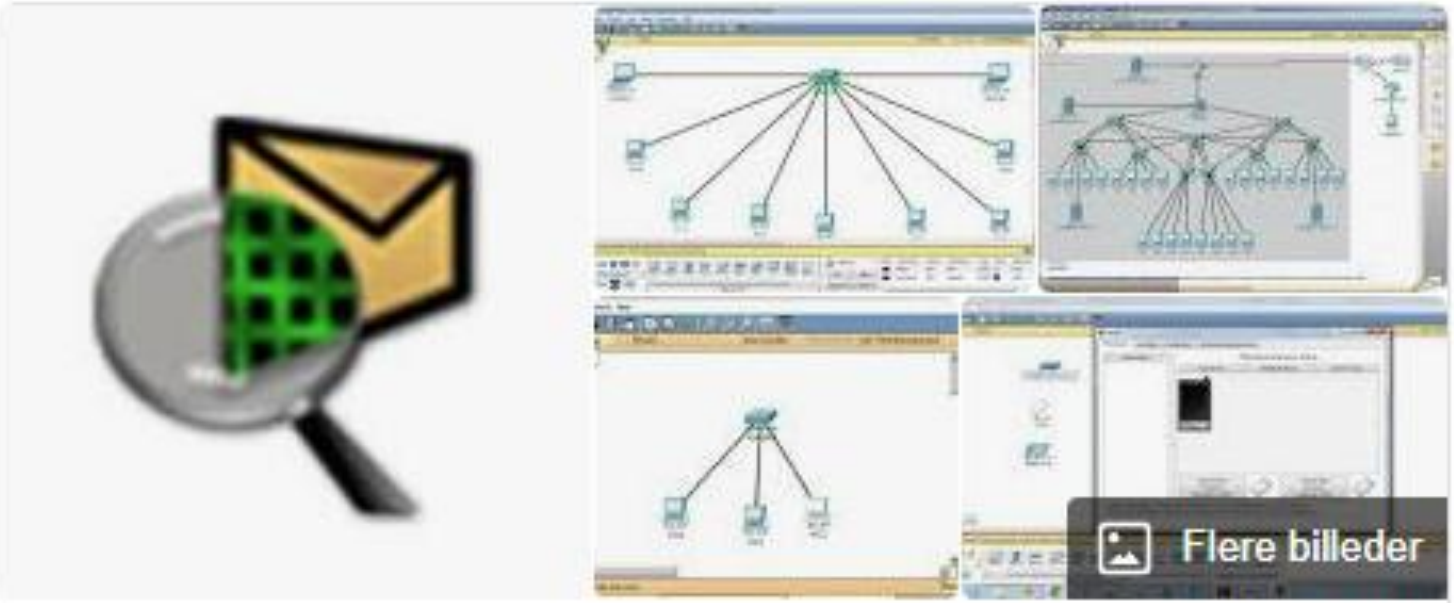
Repetition:



Repetition:



Repetition:

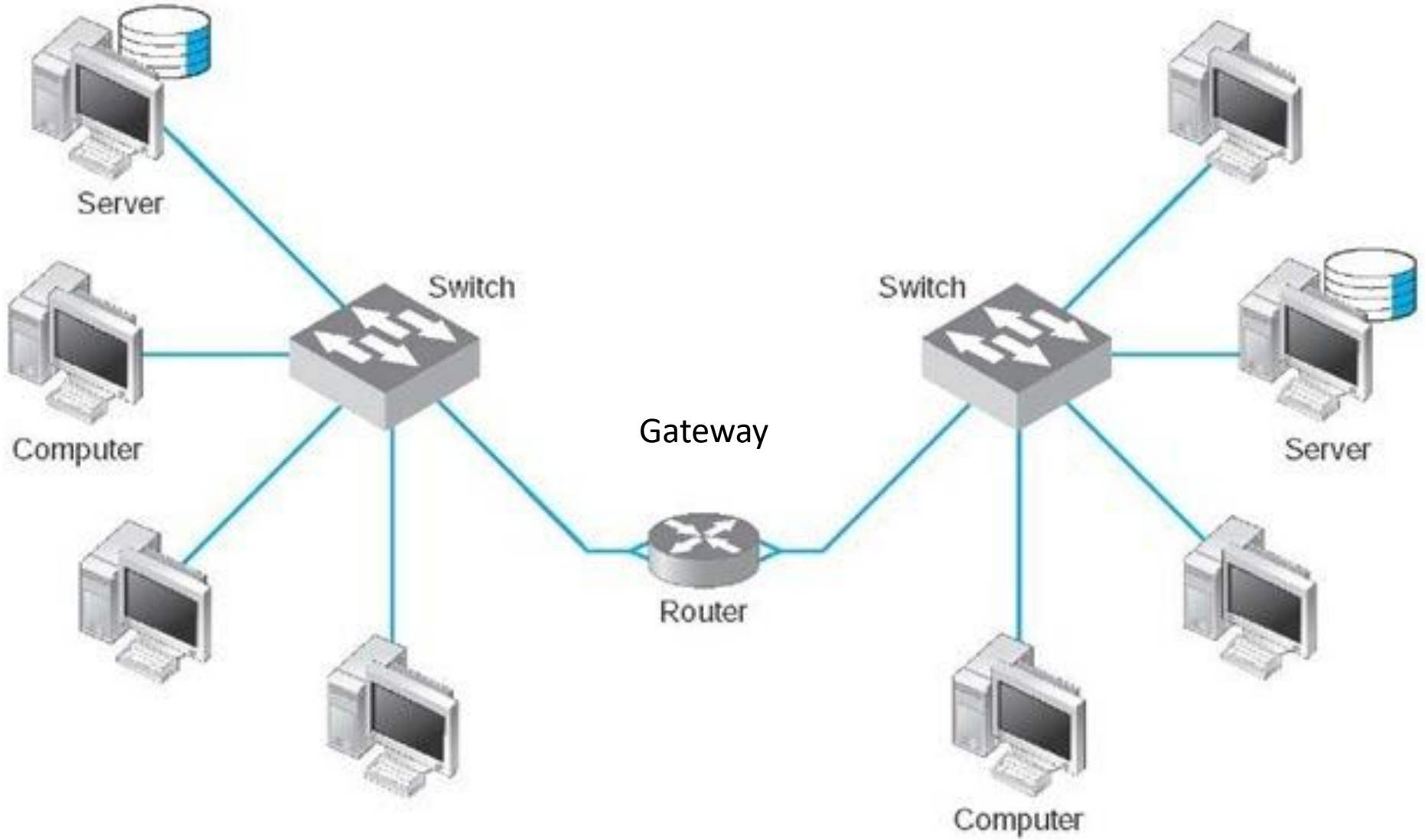


Packet Tracer

Software

Oversat fra engelsk - Packet Tracer er et visuelt simuleringsværktøj på tværs af platforme designet af Cisco Systems, der giver brugerne mulighed for at oprette netværkstopologier og efterligne moderne computernetværk.

Repetition:

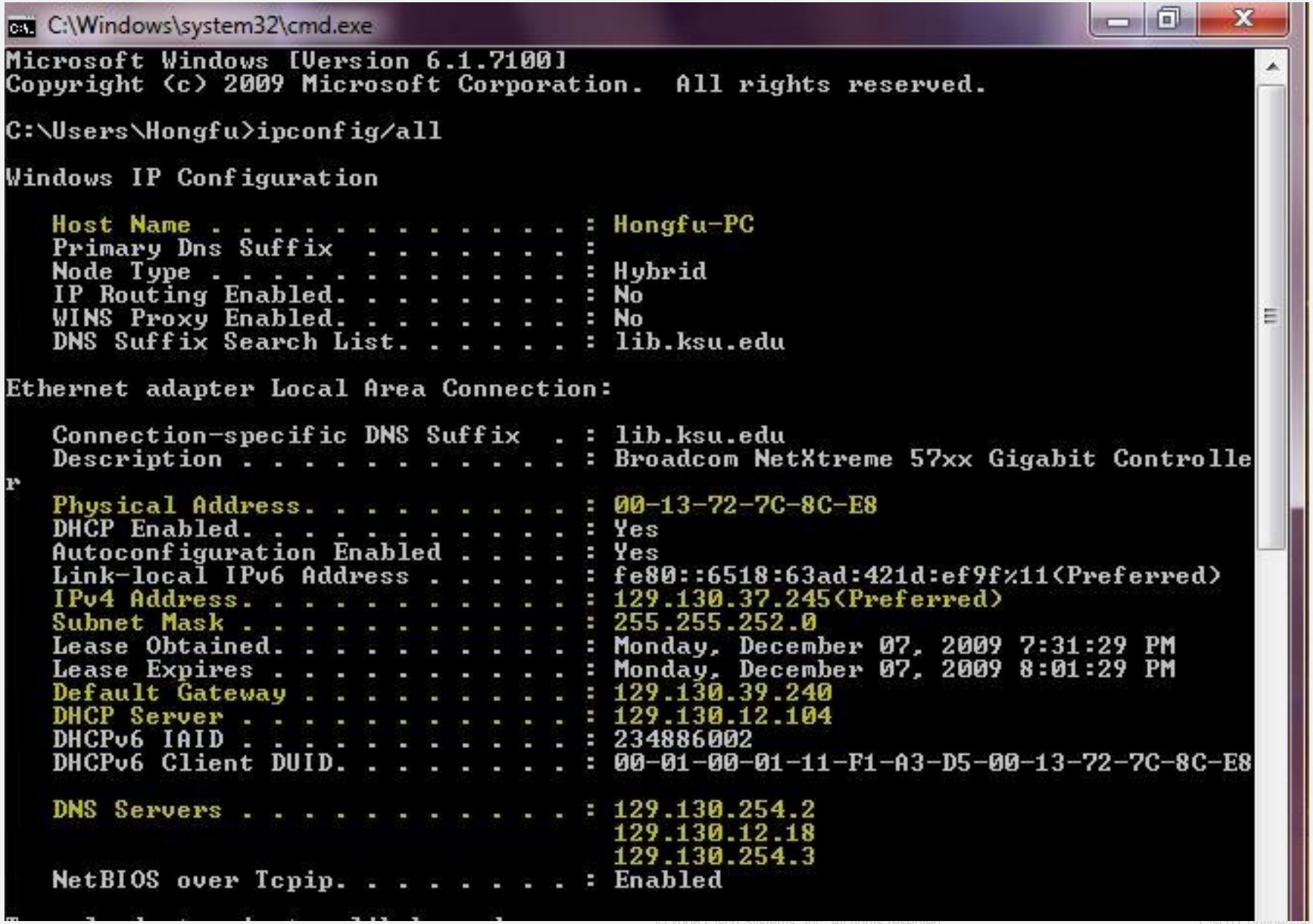

Server
Switch
Switch
Server
Computer
Gateway
Router
Computer

Repetition:

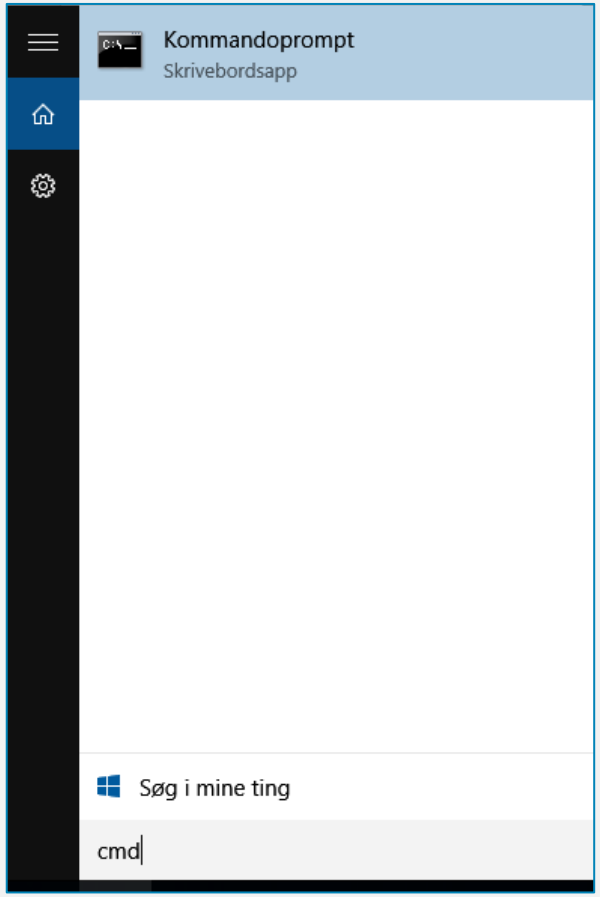
Decimaltal	Binære tal
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
10	1010
11	1011
12	1100
13	1101
14	1110
15	1111


DAGENS PROGRAM
TRÆNING I GF UNDERVISNING
HEJ & VELKOMMEN
ØREJEBOGEN & DET VISUELLE PROGRAM
DIN PERSONLIGE VISUELLE REJSE
DET VISUELLE ALFABET
IKONER I SKABELONER
HVORFOR
DIN INDRE

Ipconfig /all

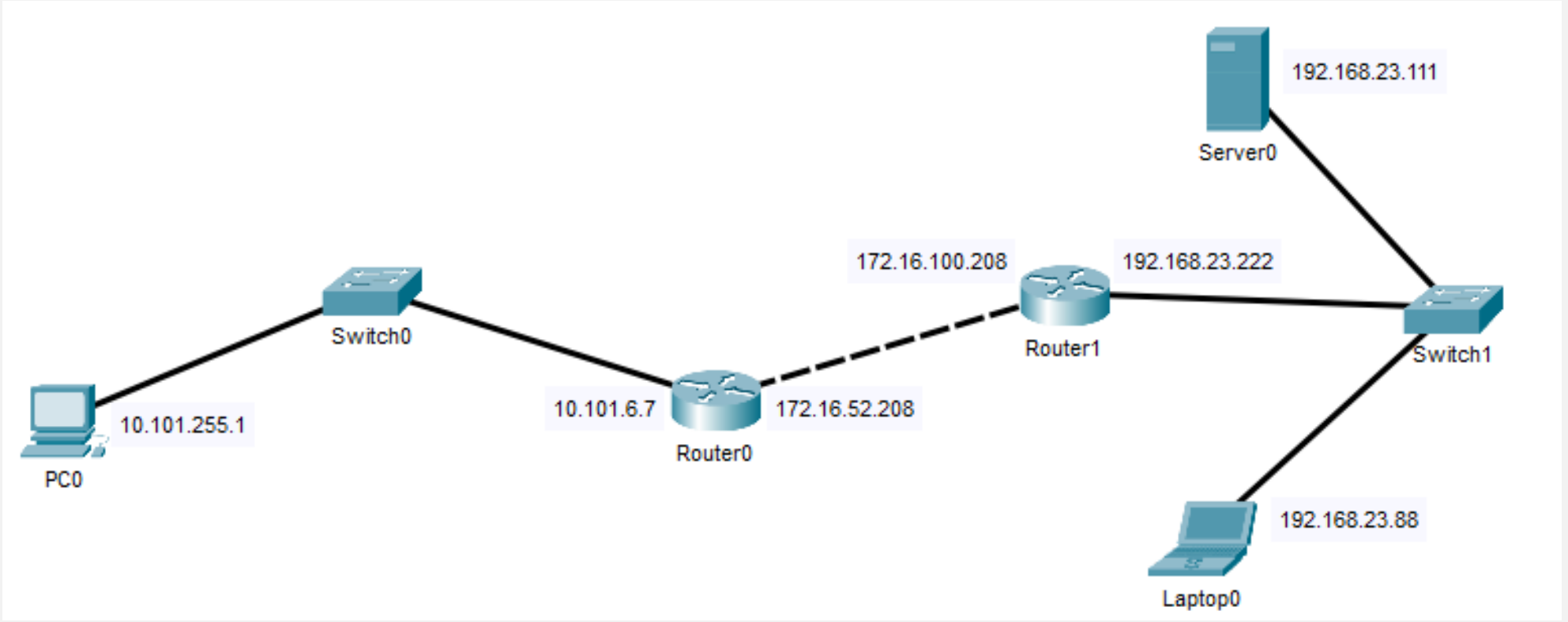


ipconfig




```
C:\Users\peno>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet 2:

   Connection-specific DNS Suffix  . : eucsj.dk
   IPv4 Address. . . . . . . . . . . : 10.101.255.1
   Subnet Mask . . . . . . . . . . . : 255.255.252.0
   Default Gateway . . . . . . . . . : 10.101.252.1
```

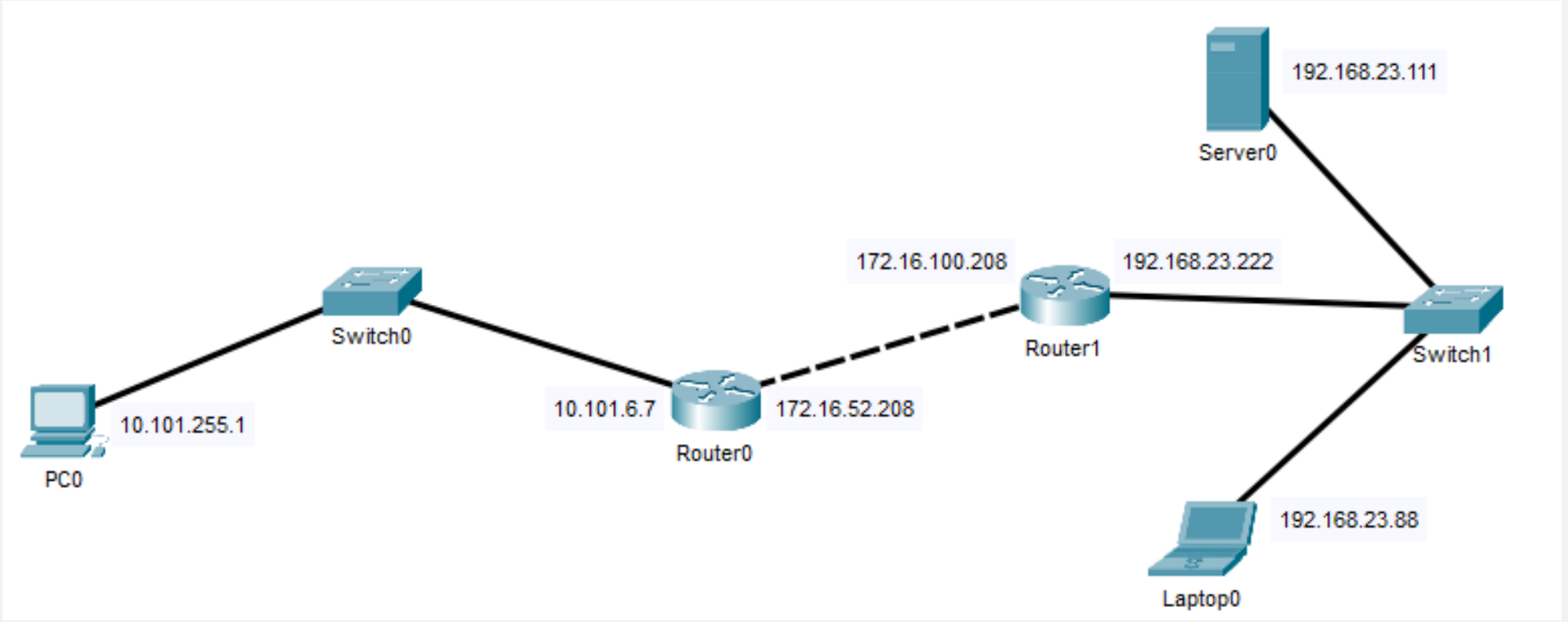
Ping



tracert

```
C:\Users\peno>tracert www.dr.dk

Tracing route to e117571.dscb.akamaiedge.net [95.100.155.168]
over a maximum of 30 hops:

  1    <1 ms     1 ms    <1 ms  192.168.87.1
  2     *        *        *     Request timed out.
  3    13 ms    13 ms    12 ms  85.218.190.58
  4    14 ms    13 ms    13 ms  be213.ejby-dist02.link.stofa.net [89.184.134.36]
  5    15 ms    13 ms    14 ms  be192.hrsk-cor03.link.stofa.net [89.184.128.78]
  6    13 ms    14 ms    13 ms  be202.banx-br01.link.stofa.net [178.155.255.201]
  7    17 ms    17 ms    18 ms  212.10.11.254
  8    15 ms    12 ms    12 ms  a95-100-155-168.deploy.static.akamaitechnologies.com [95.100.155.168]

Trace complete.
```

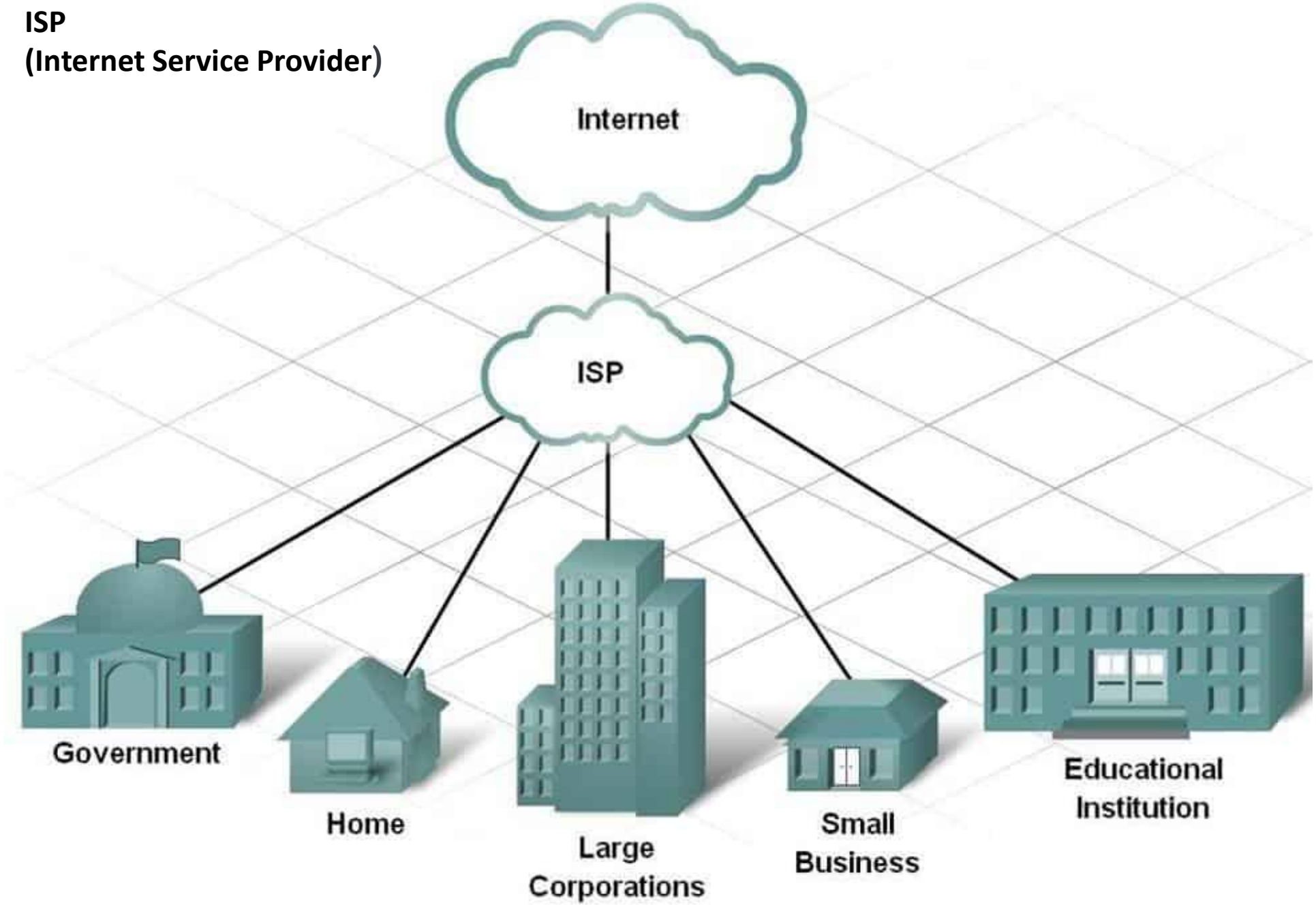
tracert



nslookup

```
Microsoft Windows [Version 10.0.19045.6396]
(c) Microsoft Corporation. Alle rettigheder forbeholdes.

C:\Users\peno>nslookup www.db.de
Server:  ns1.norlys.dk
Address:  212.10.10.4

Non-authoritative answer:
Name:    www.db.de
Address:  81.200.197.89
```

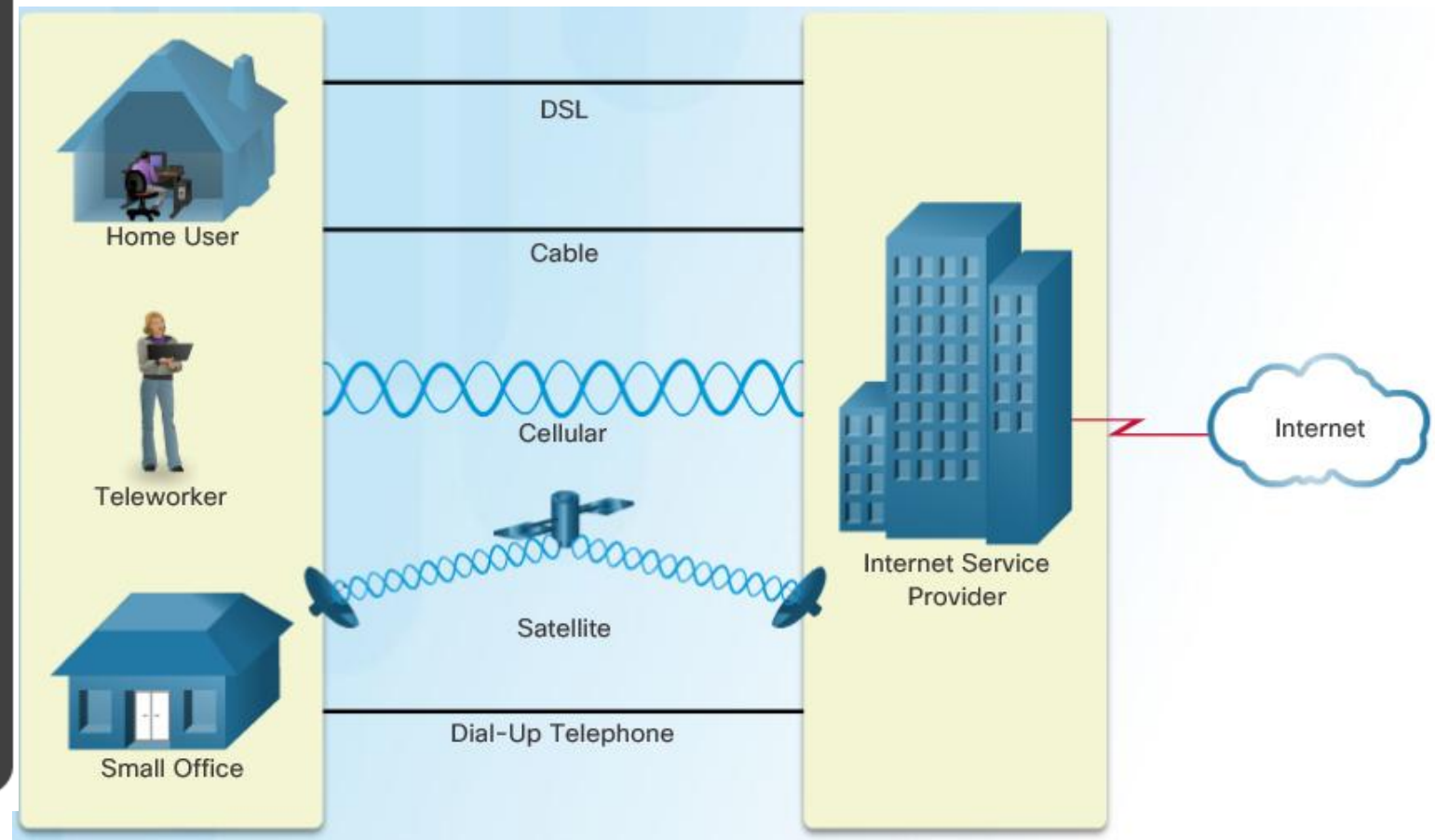
ISP
(Internet Service Provider)



Internet Connections

Internet Access Technologies

- Internet Service Provider (ISP)
- Broadband cable (TV)
- Broadband Digital Subscriber Line (DSL)
- Wireless WANs
- Mobile Services
- Business DSL
- Leased Lines
- Metro Ethernet




Kahoot!

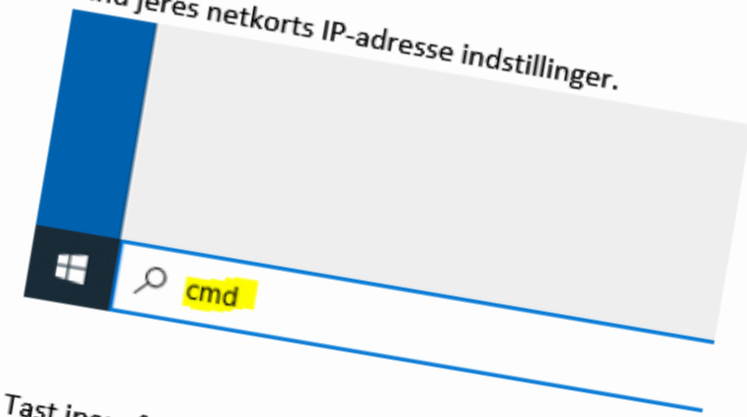
Subnetmask H1

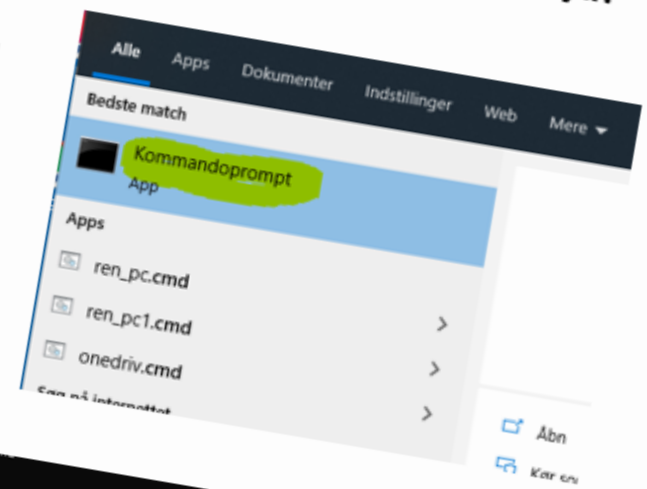
GF2 Data Næstved efterår 2021

0 svar

I denne opgaver skal der arbejdes med IP-adresser og MAC-adresser med forskellige værktøjer.

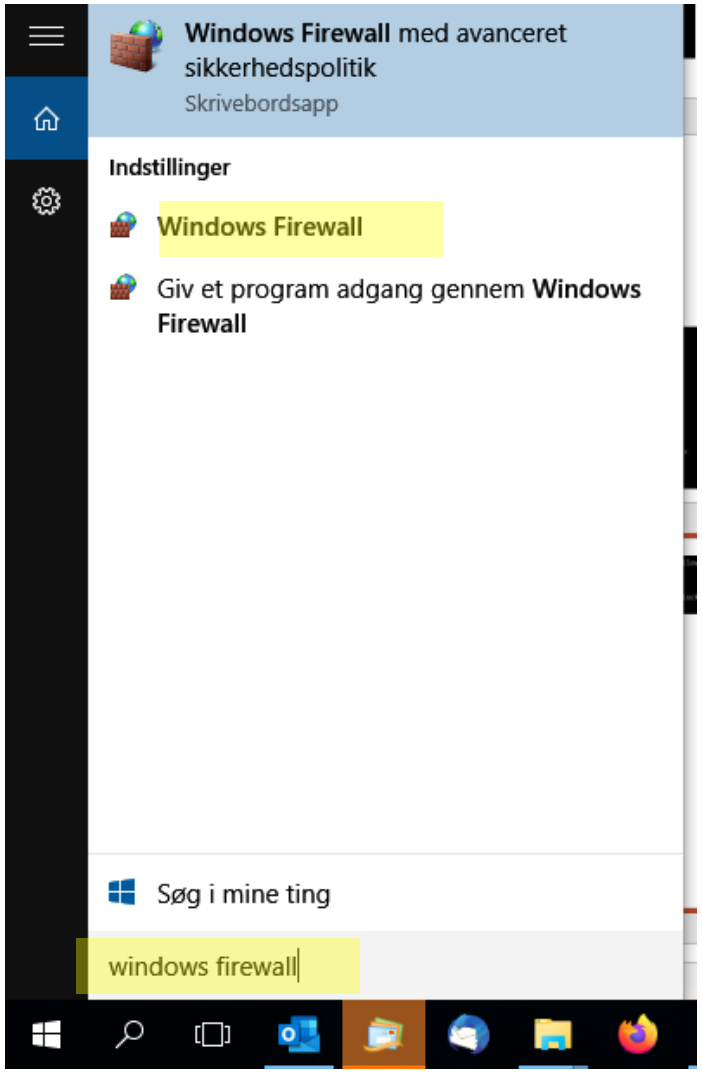
1. Find jeres netkorts IP-adresse indstillinger.

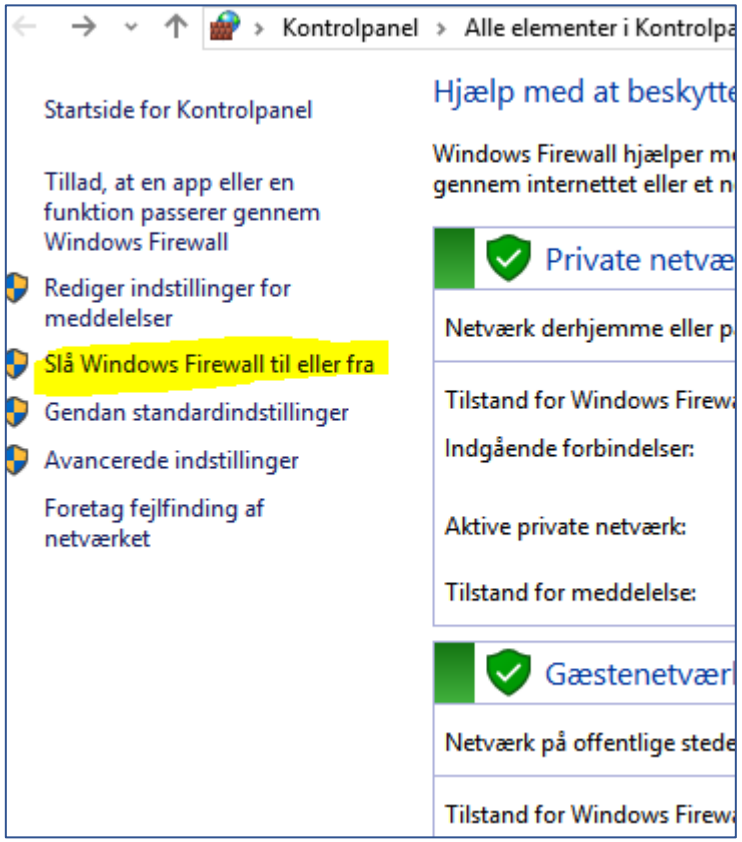


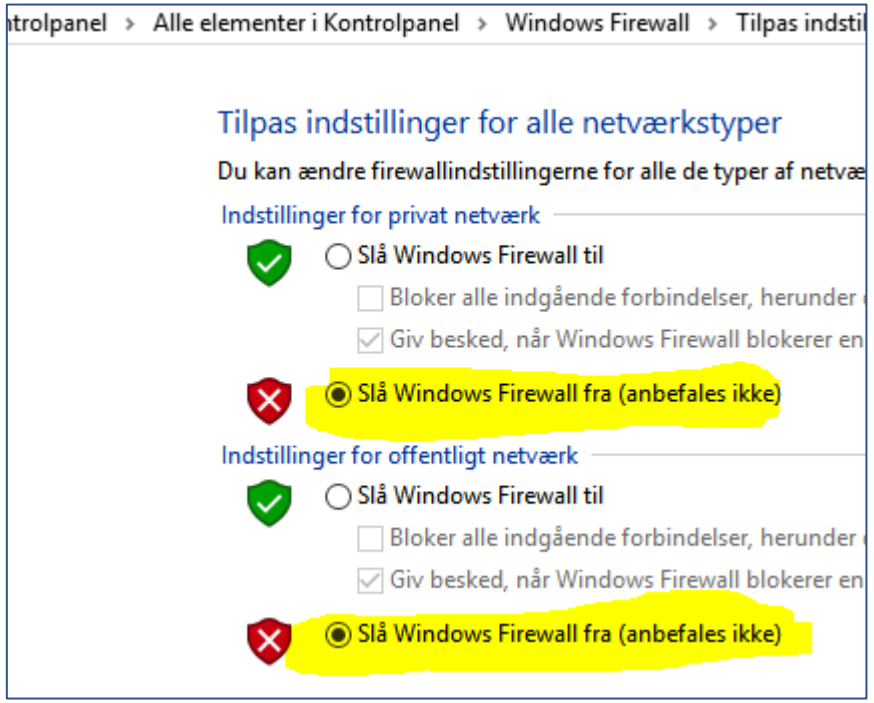


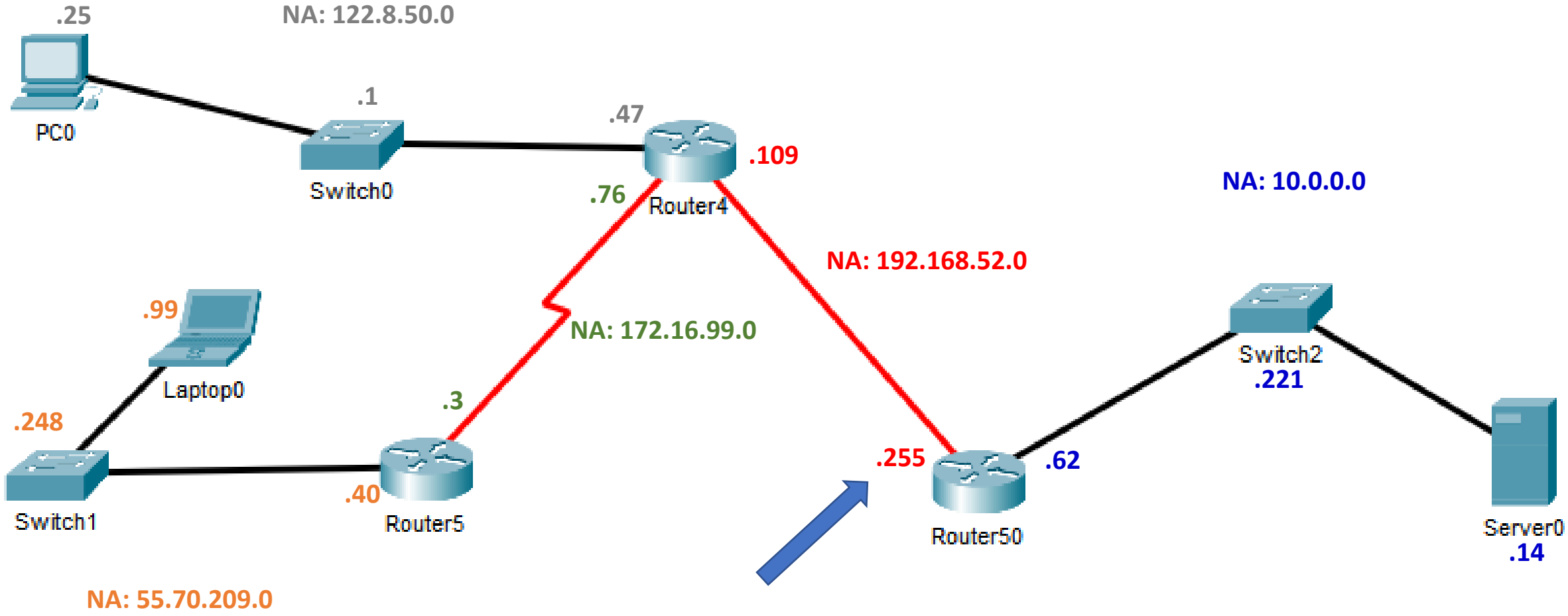
2. Tast ipconfig /all

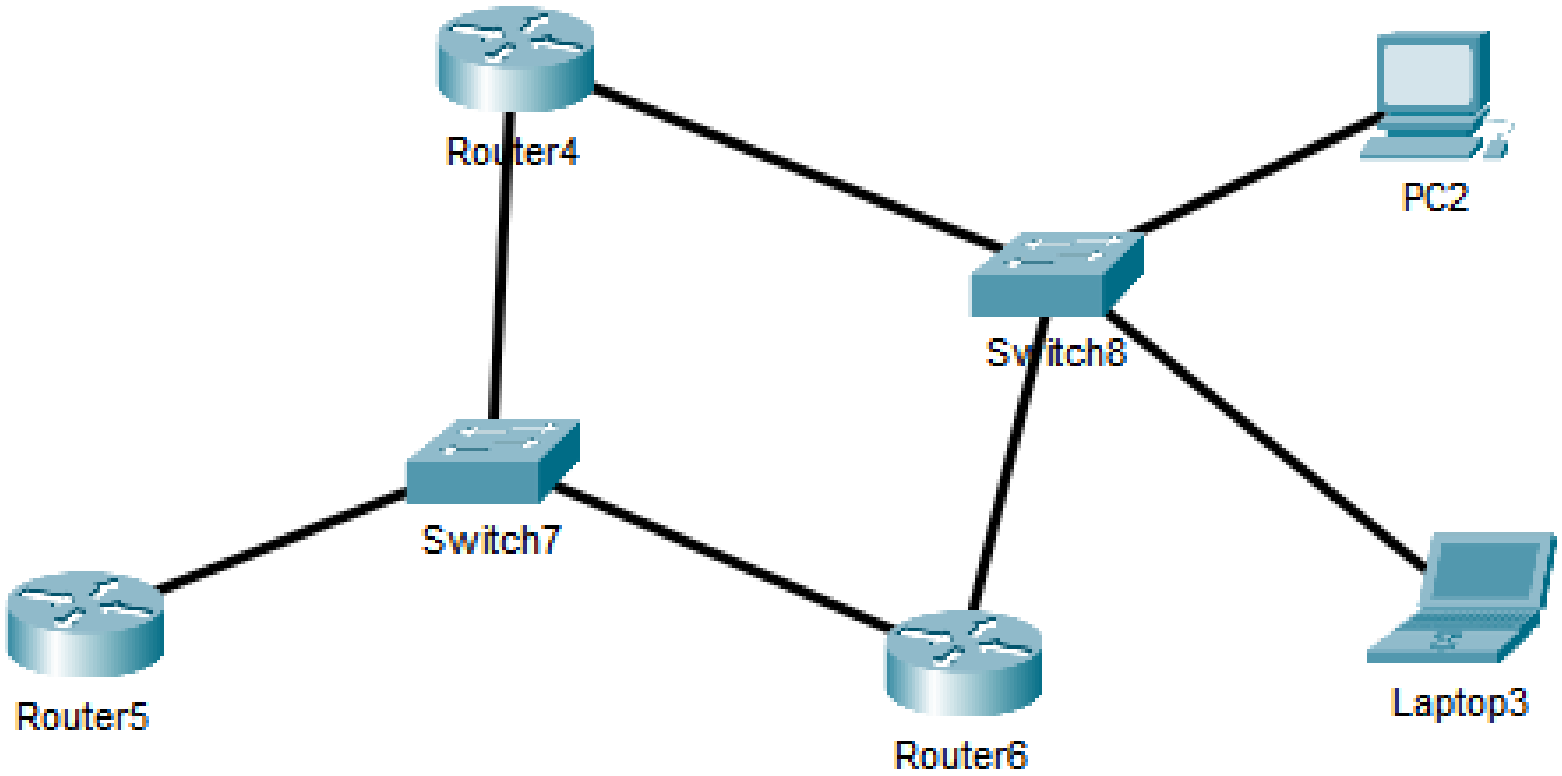
```
C:\Windows\system32>netsh advfirewall firewall add rule name="ICMP Allow incoming V4 echo request" protocol=icmpv4:8,any dir=in action=allow
Ok.


C:\Windows\system32>netsh advfirewall firewall add rule name="ICMP Allow incoming V4 echo request" protocol=icmpv4:8,any dir=in action=block
Ok.
```

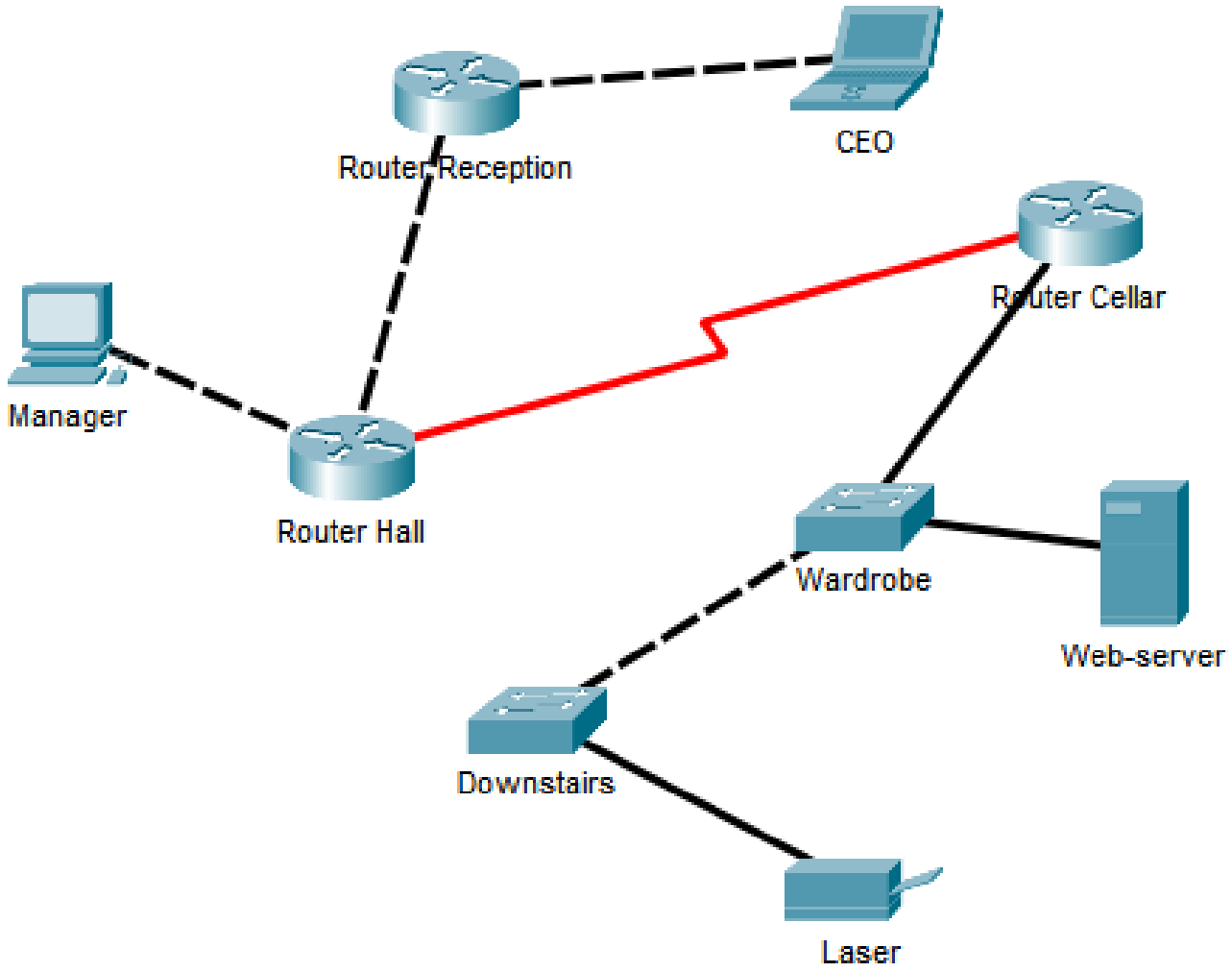




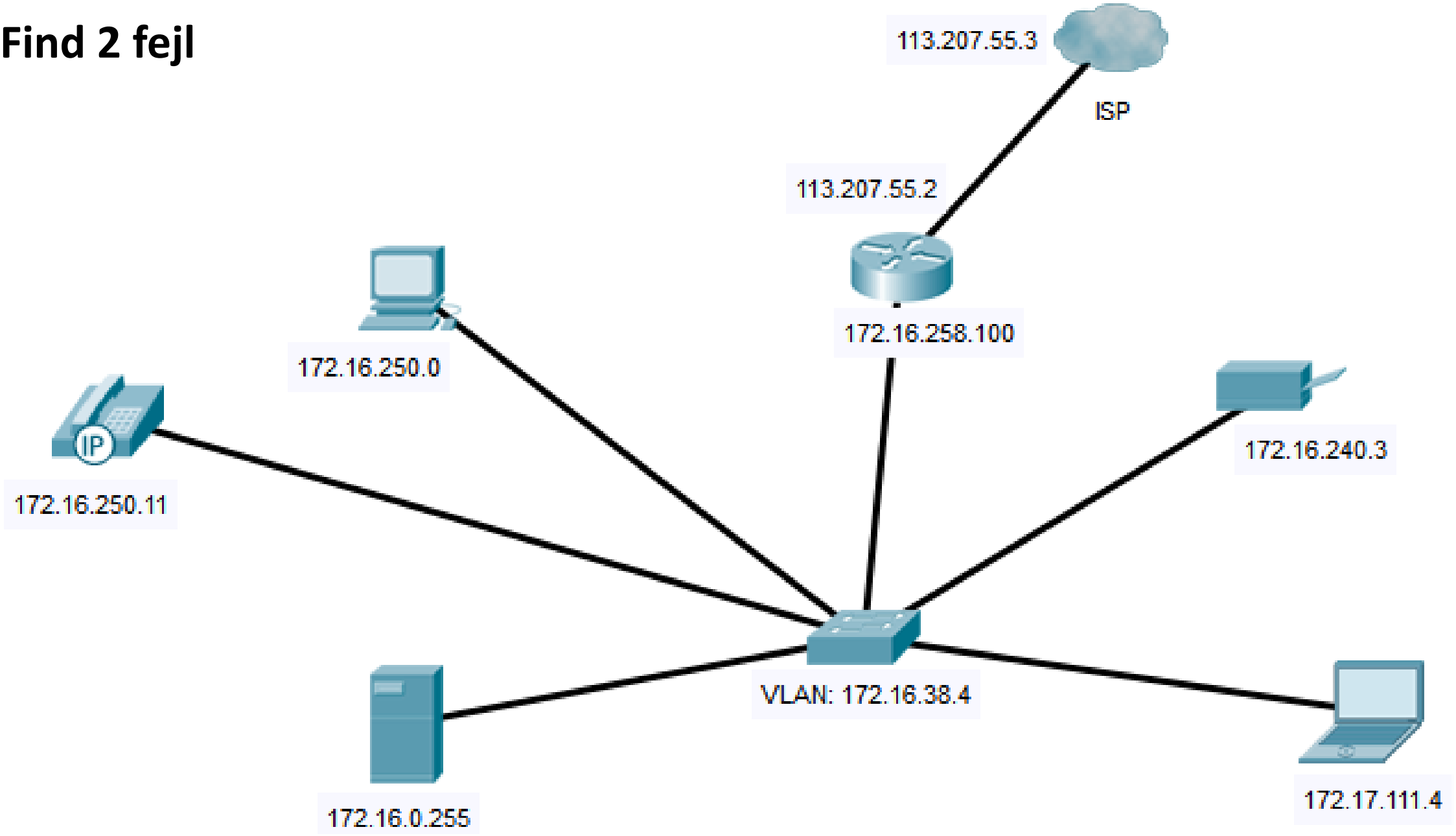



.25
NA: 122.8.50.0
PC0
.1
Switch0
.47
.109
Router4
.76
NA: 10.0.0.0
NA: 192.168.52.0
.99
Laptop0
NA: 172.16.99.0
Switch2
.221
.248
.3
.255
.62
Switch1
.40
Router5
Router50
Server0
.14
NA: 55.70.209.0

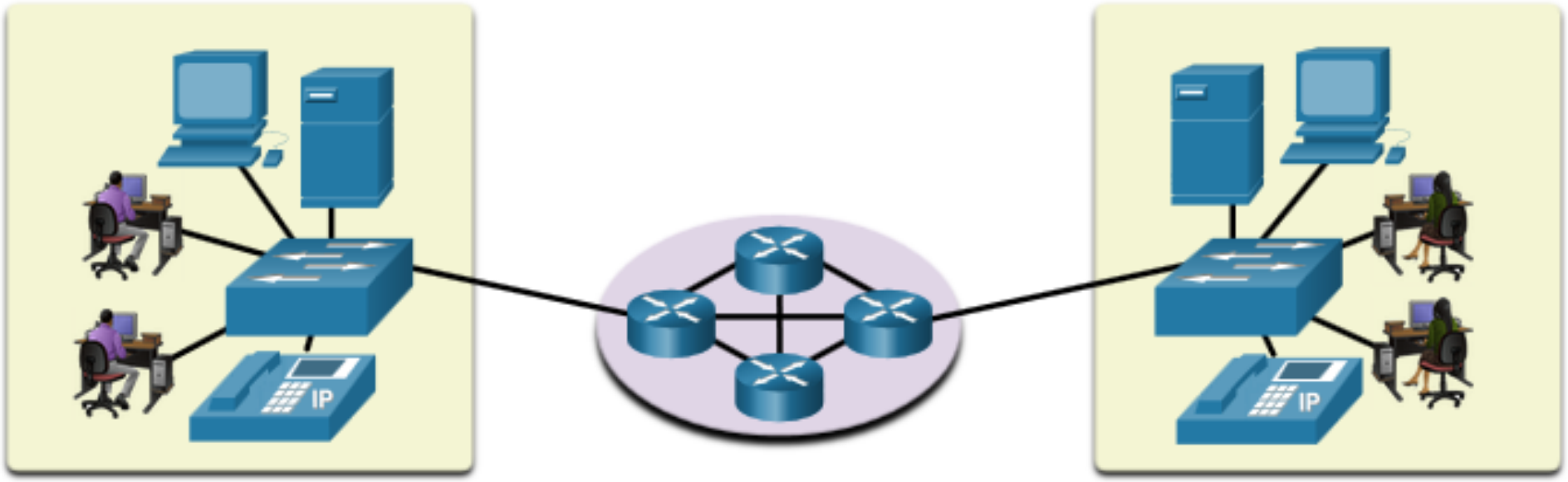

Router4
PC2
Switch8
Switch7
Router5
Router6
Laptop3

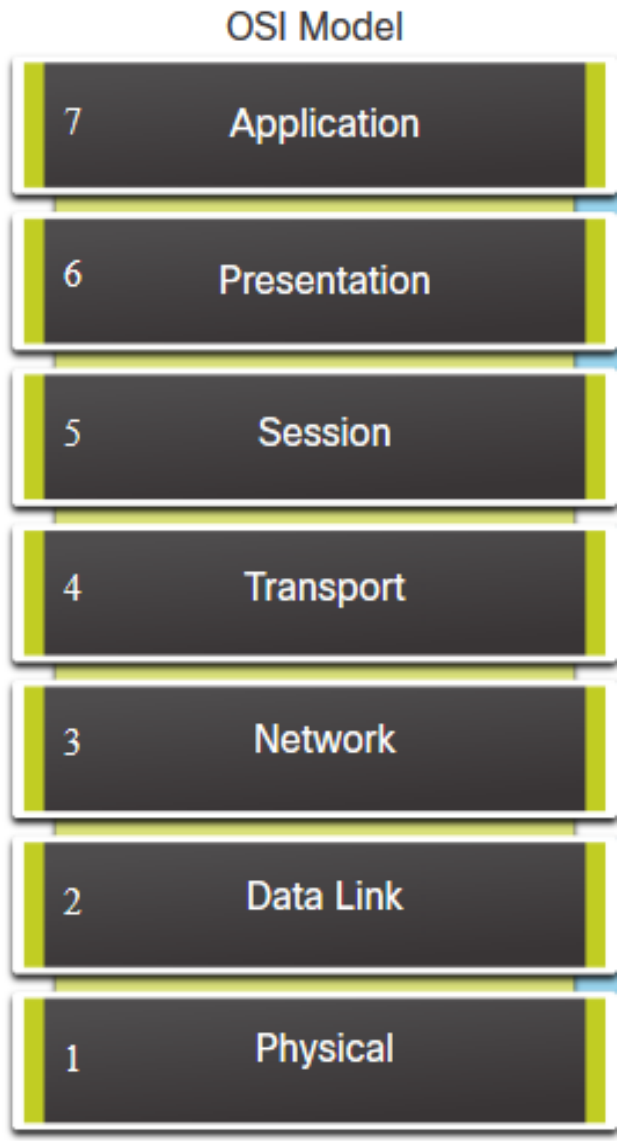

Router Reception
CEO
Router Cellar
Manager
Router Hall
Wardrobe
Web-server
Downstairs
Laser

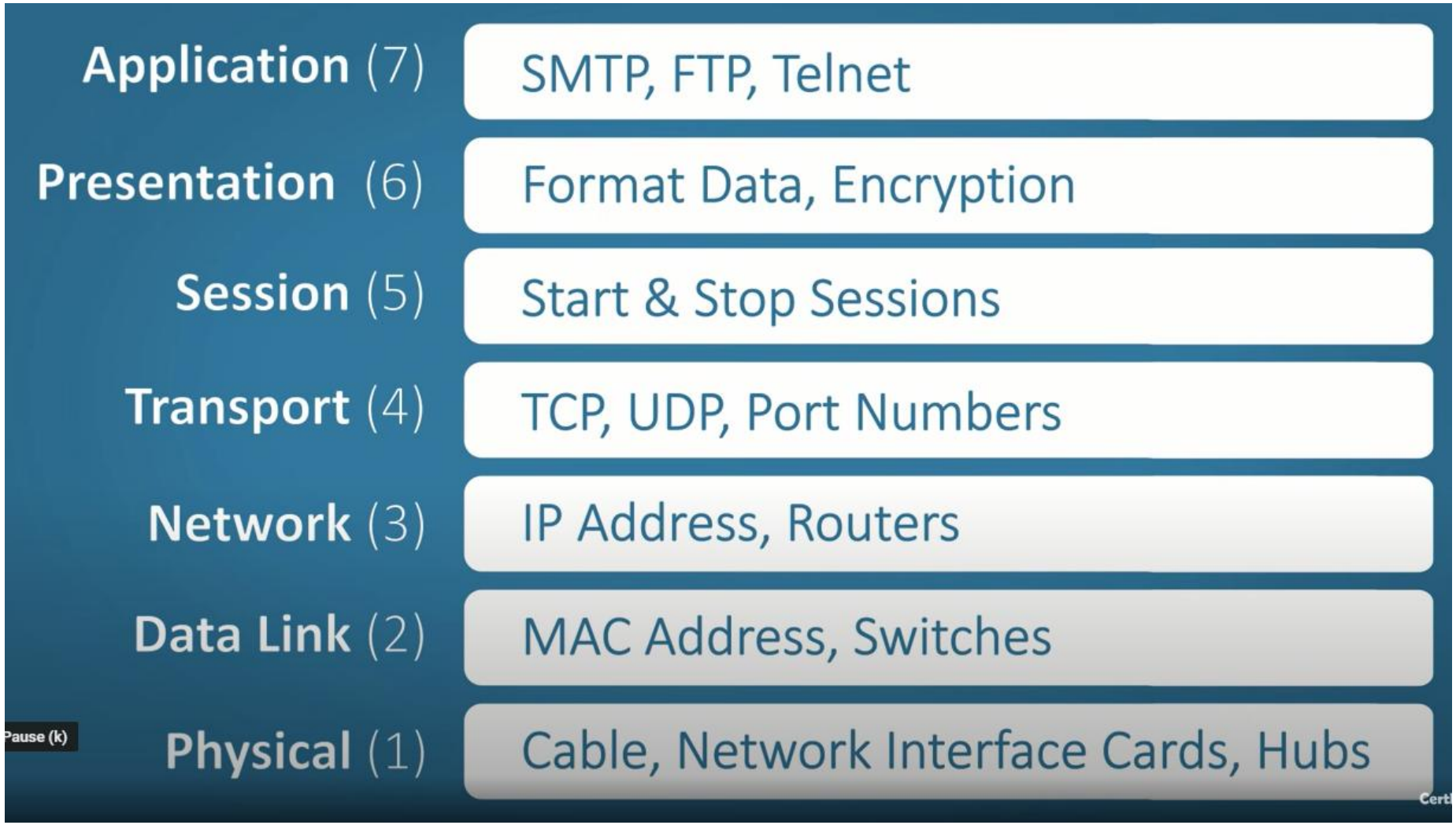
Find 2 fejl

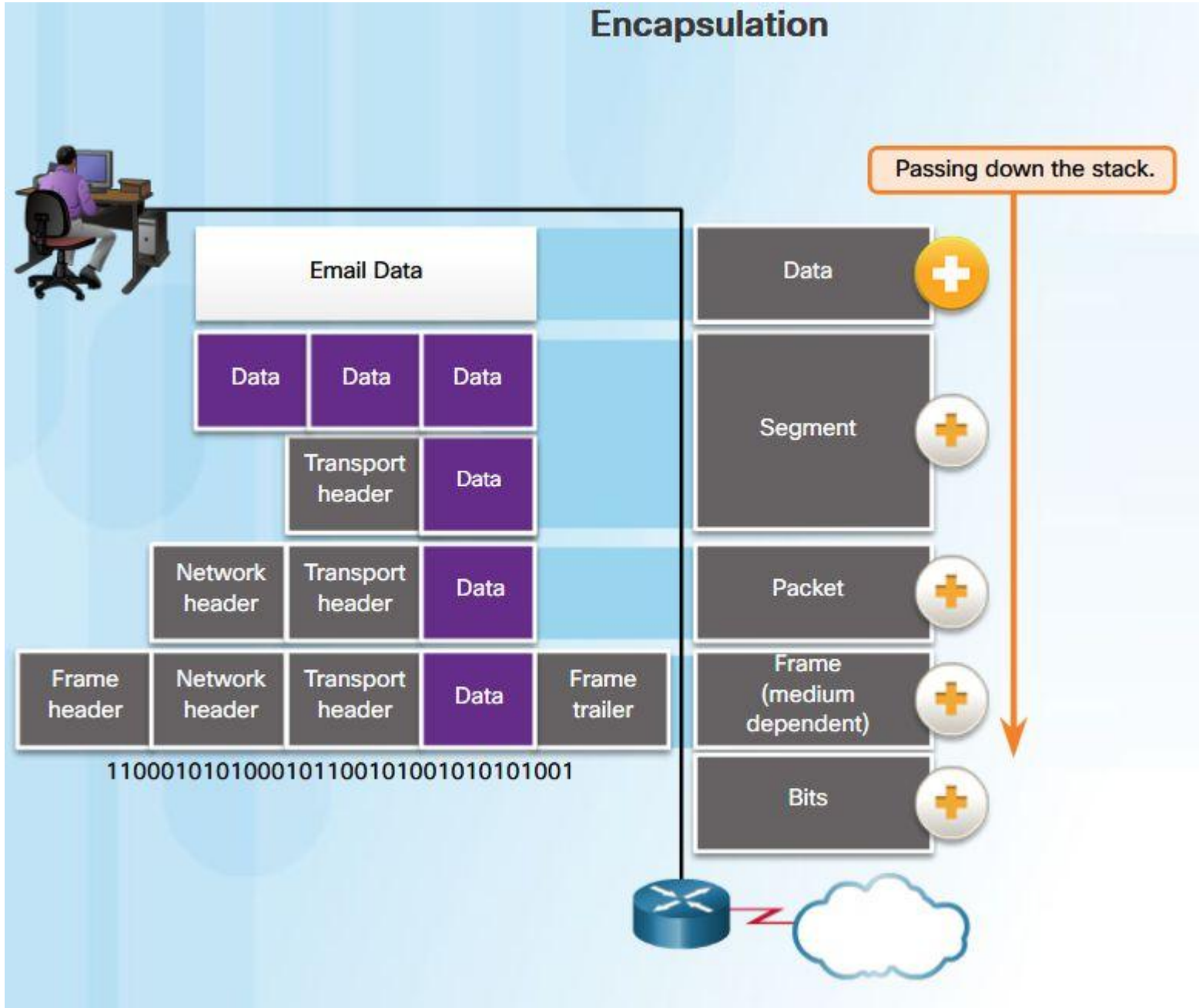

113.207.55.3
ISP
113.207.55.2
172.16.258.100
172.16.250.0
172.16.250.11
172.16.240.3
VLAN: 172.16.38.4
172.16.0.255
172.17.111.4

Datakommunikation over netværk

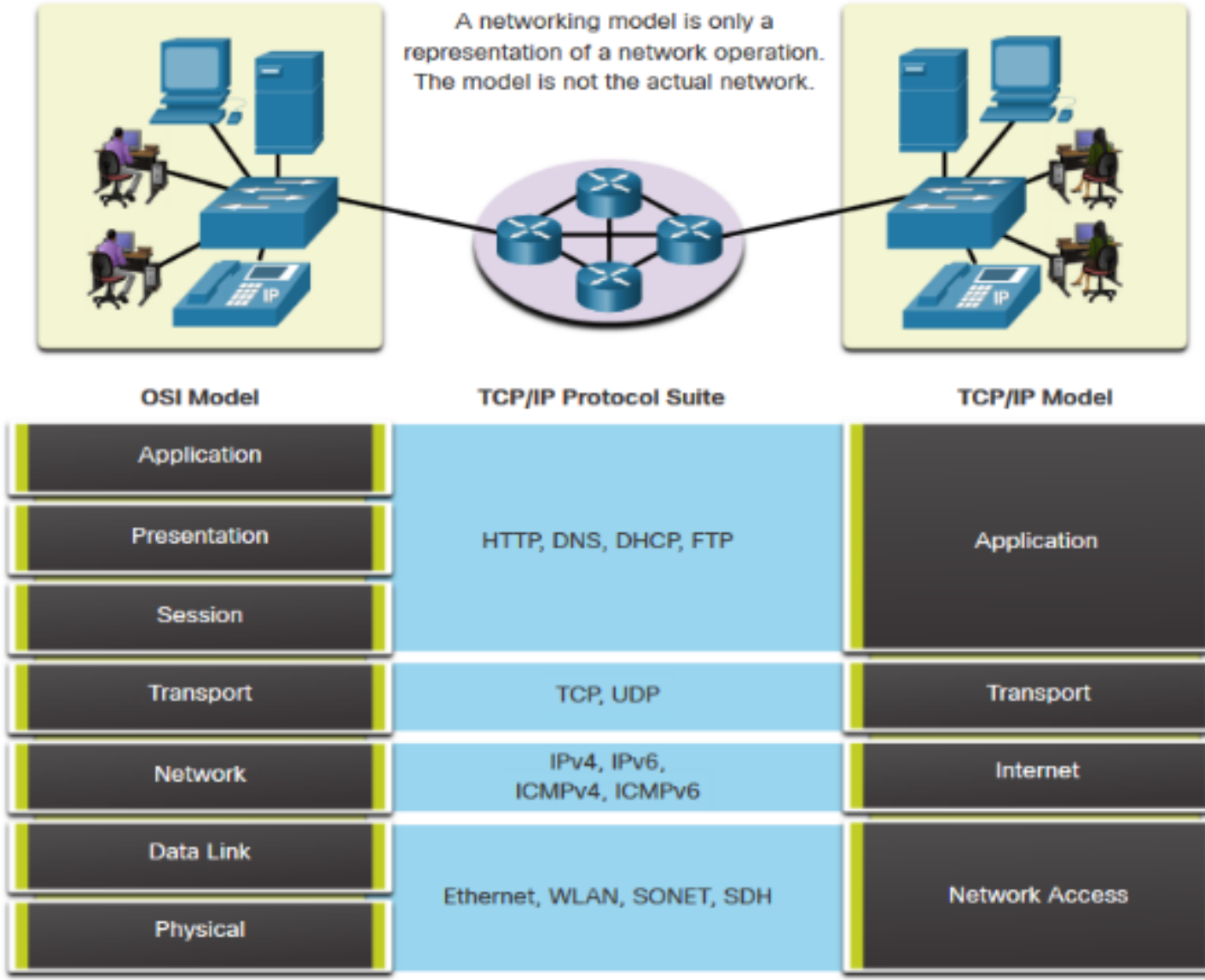



OSI Model
7
Application
6
Presentation
5
Session
4
Transport
3
Network
2
Data Link
1
Physical

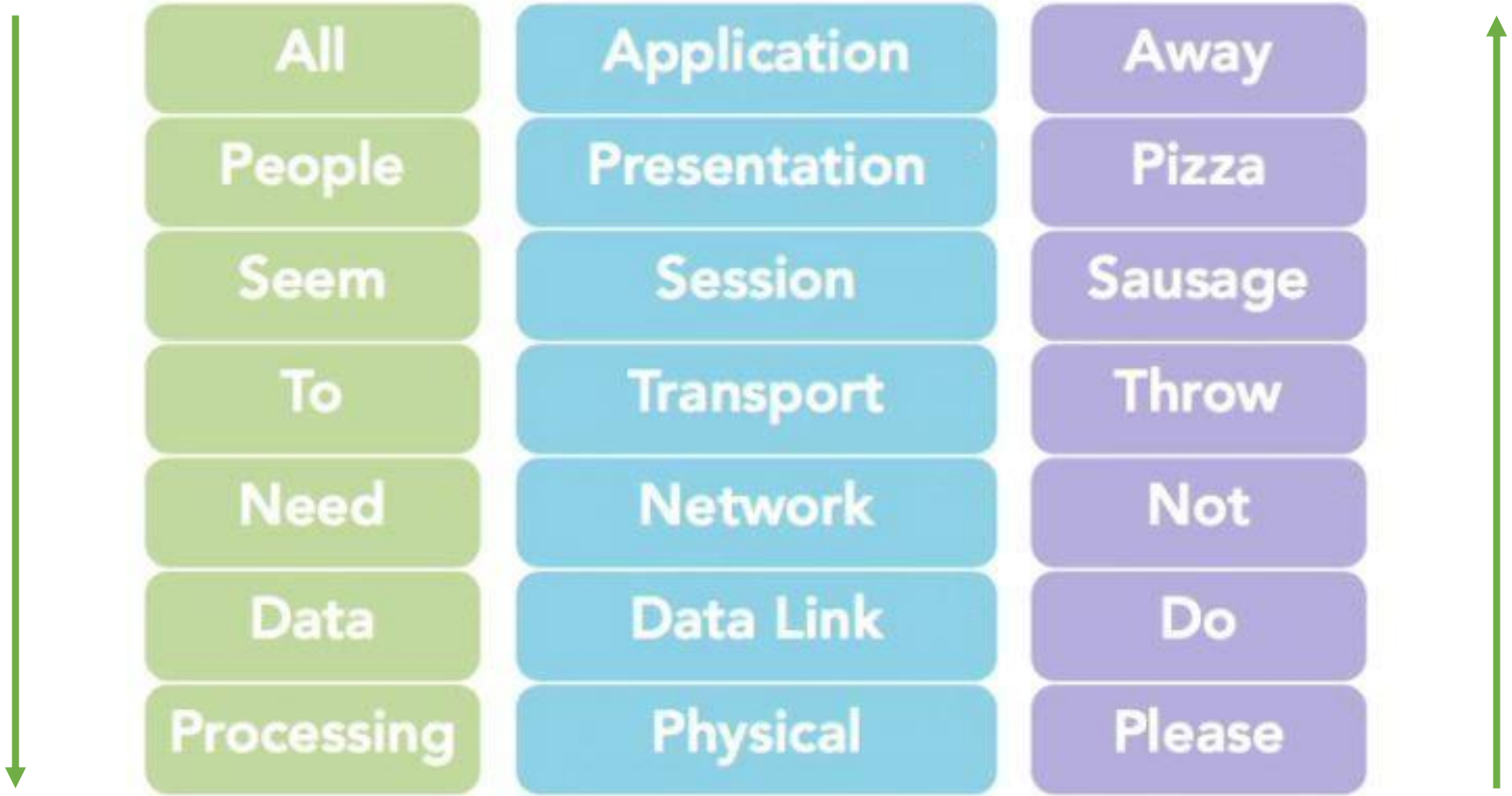

Application (7)
SMTP, FTP, Telnet
Presentation (6)
Format Data, Encryption
Session (5)
Start & Stop Sessions
Transport (4)
TCP, UDP, Port Numbers
Network (3)
IP Address, Routers
Data Link (2)
MAC Address, Switches
Physical (1)
Cable, Network Interface Cards, Hubs
Pause (k)


Encapsulation
Passing down the stack.
Email Data
Data
Data
Data
Data
Segment
Transport header
Data
Network header
Transport header
Data
Packet
Frame header
Network header
Transport header
Data
Frame trailer
Frame (medium dependent)
1100010101000101100101001010101001
Bits

Protokols, Layers

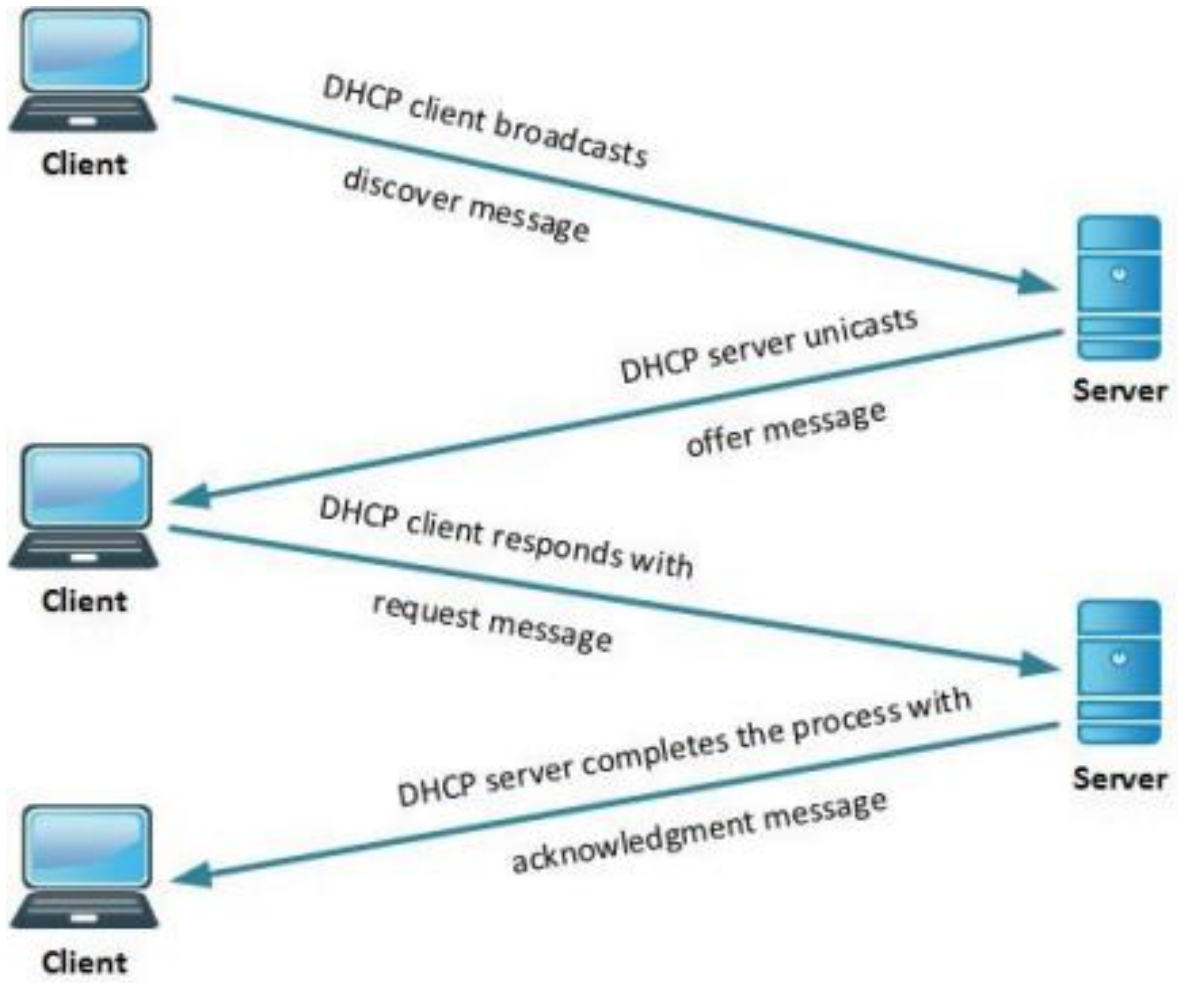


OSI Model

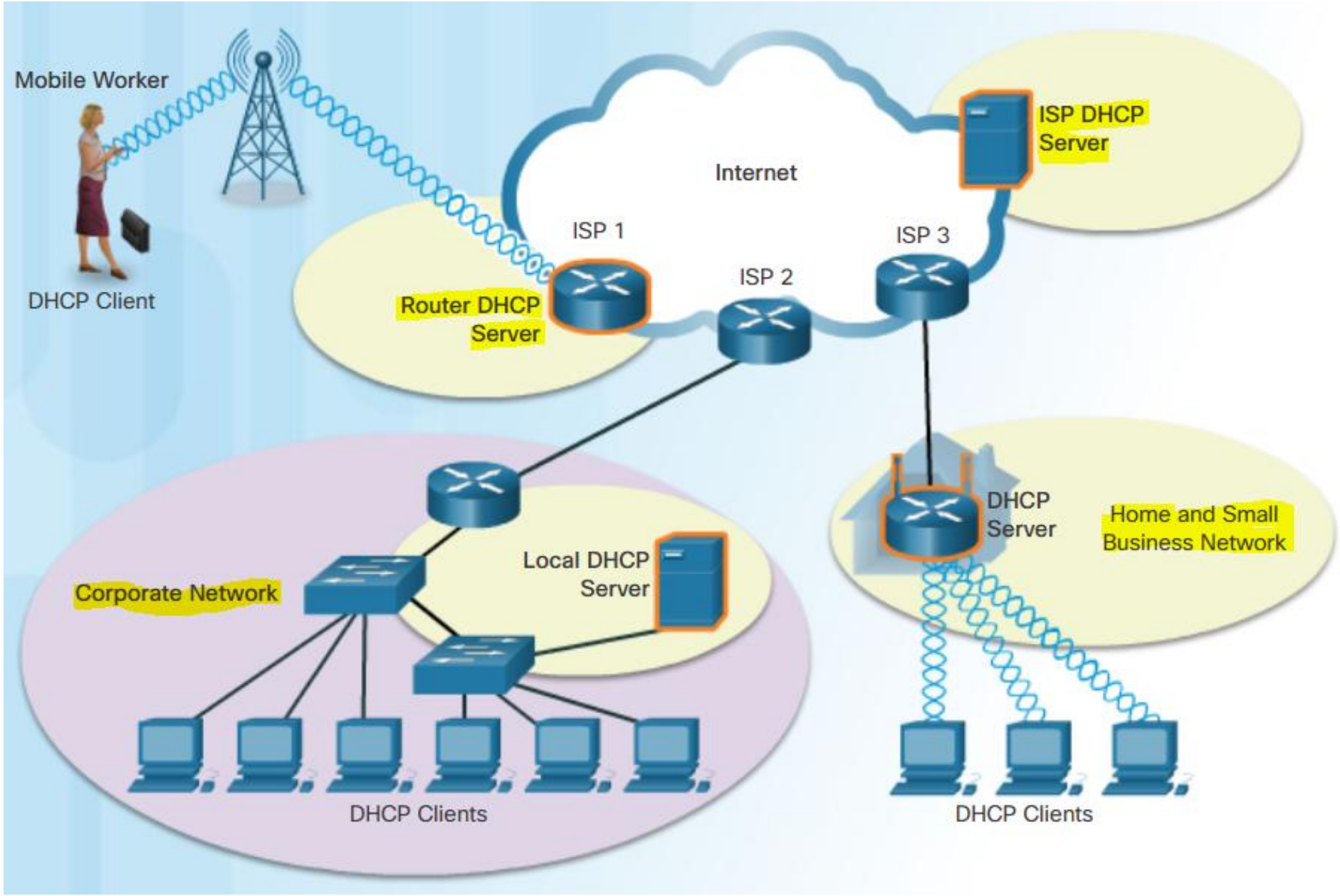

All
People
Seem
To
Need
Data
Processing
Application
Presentation
Session
Transport
Network
Data Link
Physical
Away
Pizza
Sausage
Throw
Not
Do
Please

Forbindelse	Medie	Downstream Mbit/s	Upstream Mbit/s
Telefon	ADSL	150	30
Kabel-anlæg	Coax	1000	100
Fibernet	Fiber	1000	1000
Mobilt	5G	200	100
Satellit	Luft	20	?

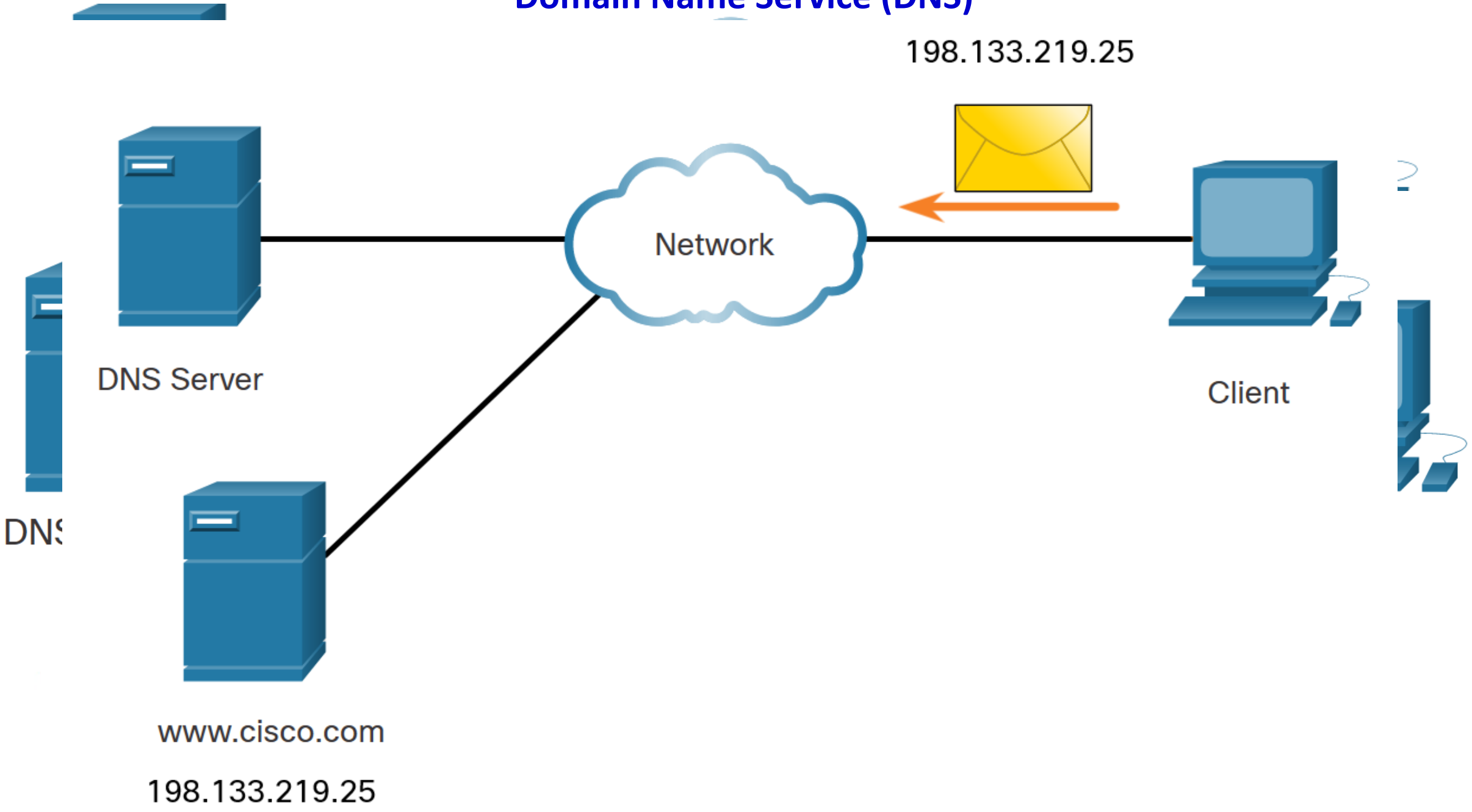
Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.



Dynamic Host Configuration Protocol (DHCP)

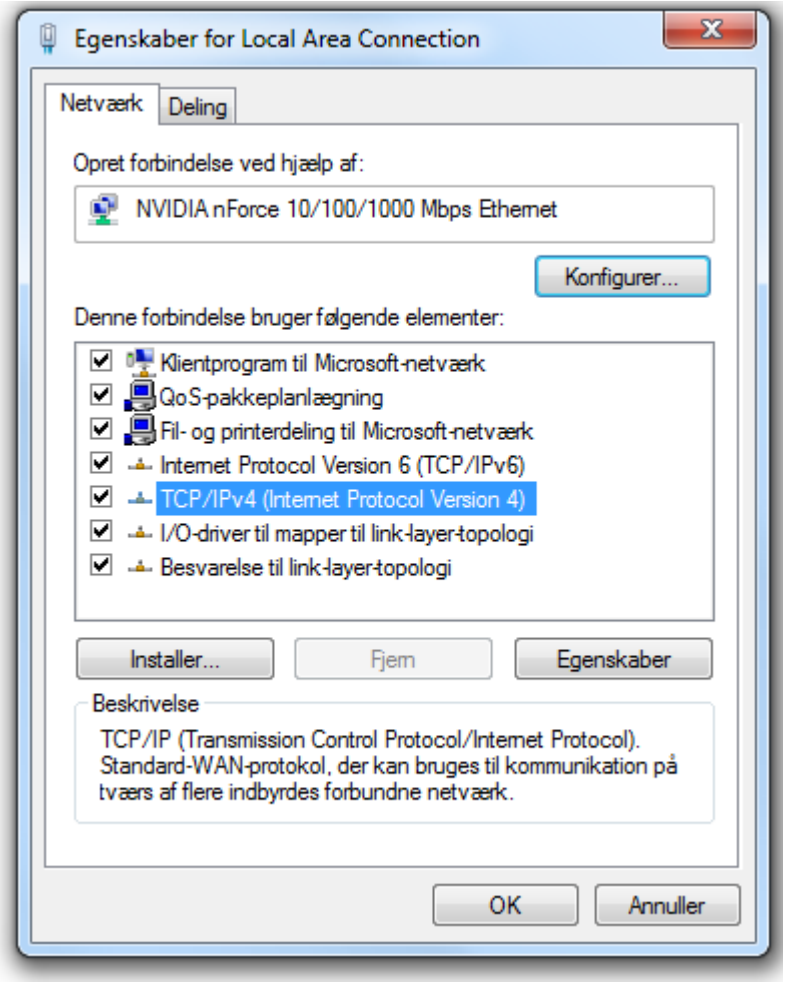


Domain Name Service (DNS)

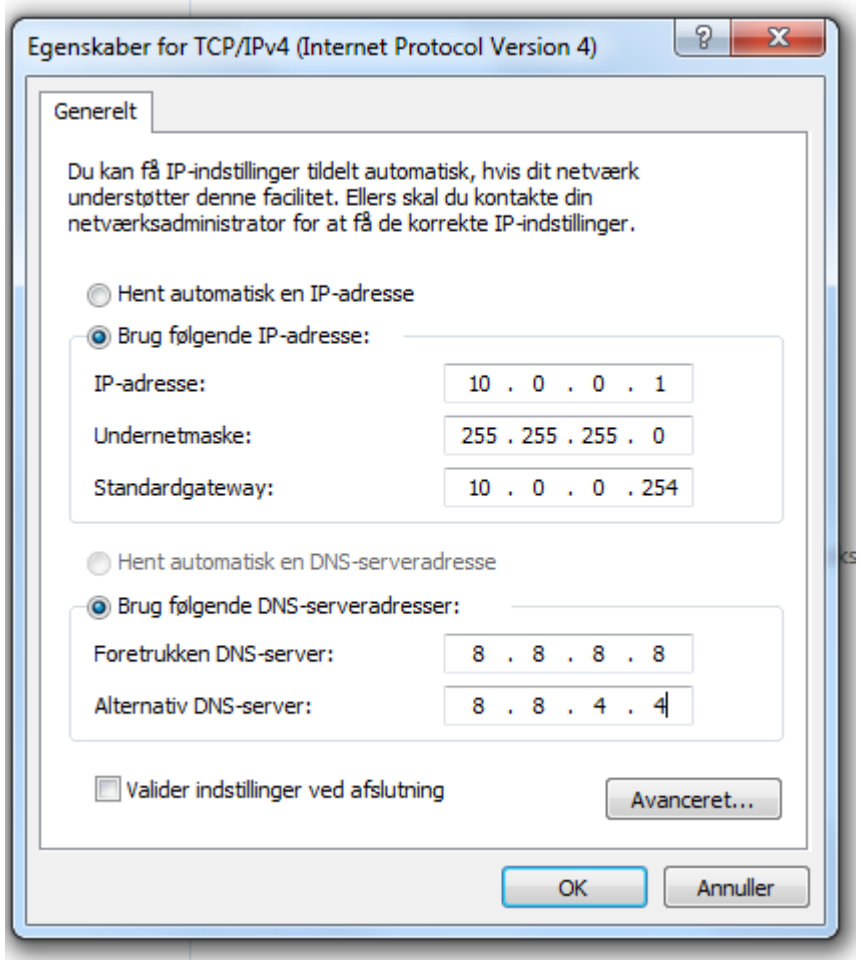


Assigning a Static IPv4 Address to a Host

LAN Interface Properties



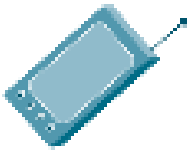
Configuring a Static IPv4 Address



DYNAMISK

TV

Laptop



Mobil

PC

Tablet

STATISK

Server

Switch

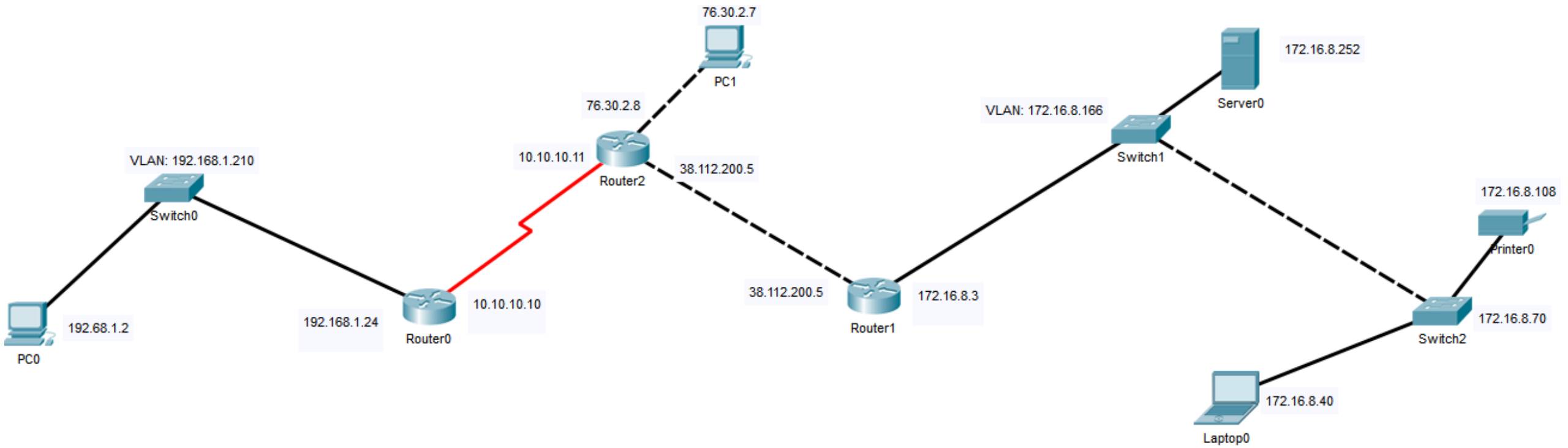
Router

Camera

AccessPoint

Printer

Find Gateway



Wireless

TEKNIQ
INSTALLATØRERNES ORGANISATION

DANSK EL-FORBUND

Den Store Blå

ELEKTRIKERUDDANNELSEN

H1 data

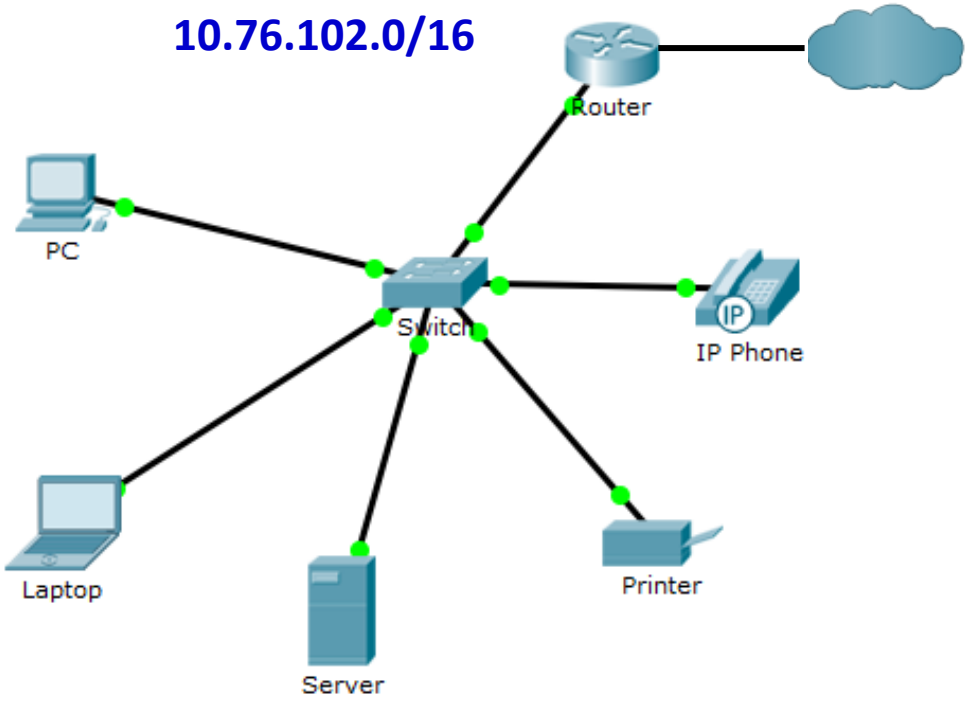
3. dag

	H1
Fre 23/1	TEORI: - **IP-adresser** (klasser-private-public-subnetmask-gateway-na-fha-lha-bc-nat) - **Topologier** (lan-wan-man-pan-internet-extranet-intranet) - **Netværkskomponenter** (switch-router-wap-repeater-modem-hjemmerouter) PRAKTIK: - **Packet Tracer øvelser**
Man 26/1	TEORI: - **Repetition** - **Netværkskommunikation** (isp-medier-ip-opsætning) - **Protokoller** (dns-dhcp) - **OSI-modellen** - **Test af netværk** (ipconfig-ping) - **Trådløst netværk** PRAKTIK: - **Hjemmerouter**
Tirs 27/1	TEORI: - **Repetition** - **Besøg af DEF 10.00 – 11.30** - **Adresseplaner** PRØVER: - **Opsætning af trådløs router og mindre netværk** - **Oprydning** - **Teoretisk prøve**

Repetition:

Repetition:

10.76.102.0/16



1. Angiv IP-adresser for netværk.

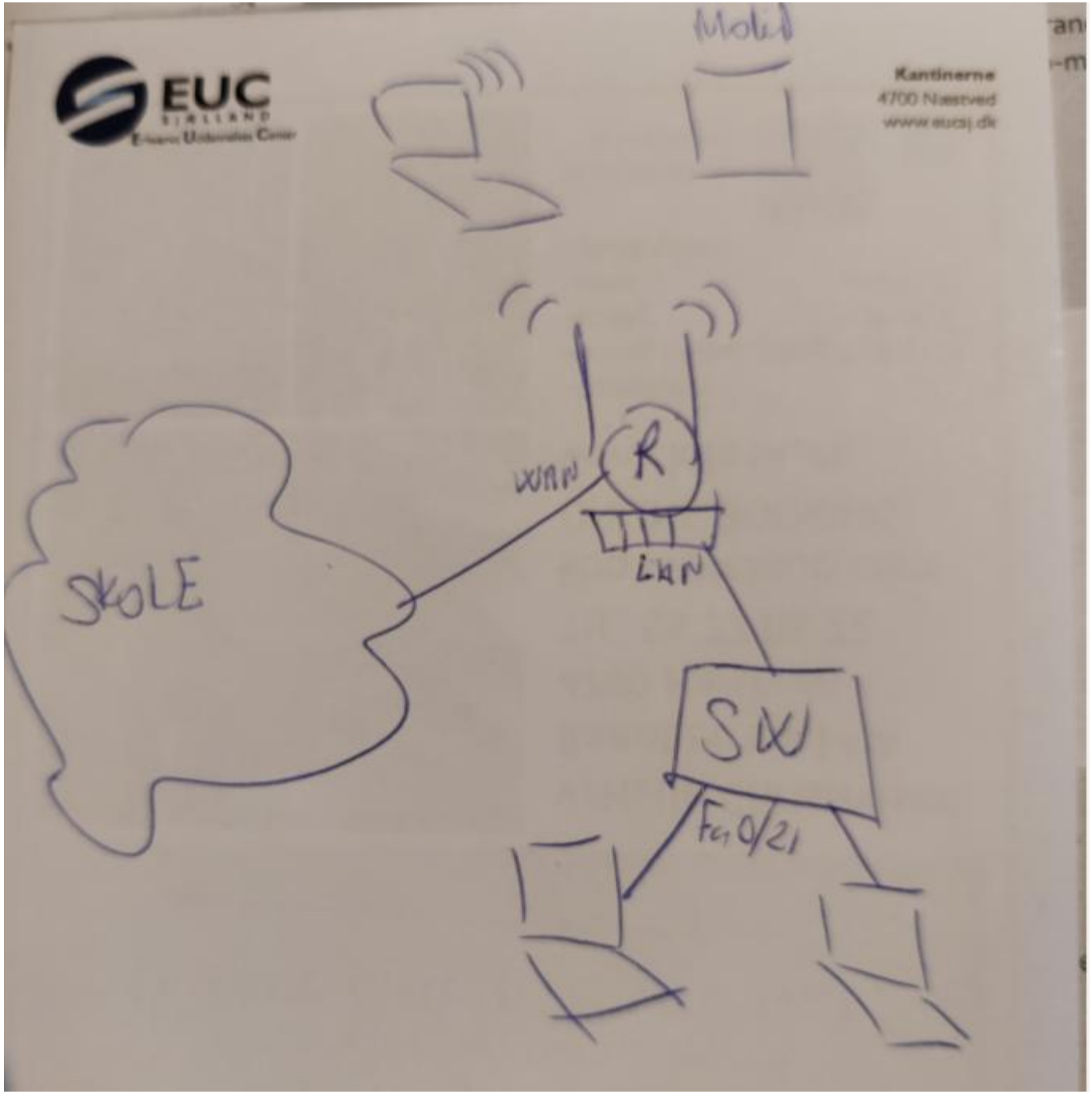
Network Address	
First Host Address	
Last Host Address	
Broadcast	
Mask	

2. Fordel statiske IP-adresser for udstyr.
End-devices de første, og **Intermediary-devices** de sidste.

	NIC	Gateway-adresse
PC		
Laptop		
Server		
Printer		
IP Phone		
Router		
Switch		

3. Angiv DHCP-scope med 30 adresser.

Start IP-add	End IP-add


EUC
Kantinerne
4700 Næstved
www.eucsj.dk
Mobil
R
SKOLE
SW
Fa 0/21


2018
JANUAR
Nå , hvad skal vi nu i gang med?
RJUUL-18-

Multiple Choice !!!

- Enkeltmandsprøve
- Udleverede papirer
- Egne noter

Mobil, tablet eller PC bruges kun til opslag i egne noter – ingen søgning på nettet.

Prøve er karaktergivende !

For at bestå, skal man minimum have 14 rigtige svar ud af 27 spørgsmål.