

Sieci komputerowe

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20.01.2022



- 1 Model warstwowy sieci

Plan wykładu 12 (powtórka)

- 1 Model warstwowy sieci
- 2 Warstwa 7

Plan wykładu 12 (powtórka)

- 1 Model warstwowy sieci
- 2 Warstwa 7
- 3 Warstwa 4

Plan wykładu 12 (powtórka)

- 1 Model warstwowy sieci
- 2 Warstwa 7
- 3 Warstwa 4
- 4 Warstwa 3

Plan wykładu 12 (powtórka)

- 1 Model warstwowy sieci
- 2 Warstwa 7
- 3 Warstwa 4
- 4 Warstwa 3
- 5 Warstwa 2

Plan wykładu 12 (powtórka)

- 1 Model warstwowy sieci
- 2 Warstwa 7
- 3 Warstwa 4
- 4 Warstwa 3
- 5 Warstwa 2
- 6 Warstwa 1

Model warstwowy sieci

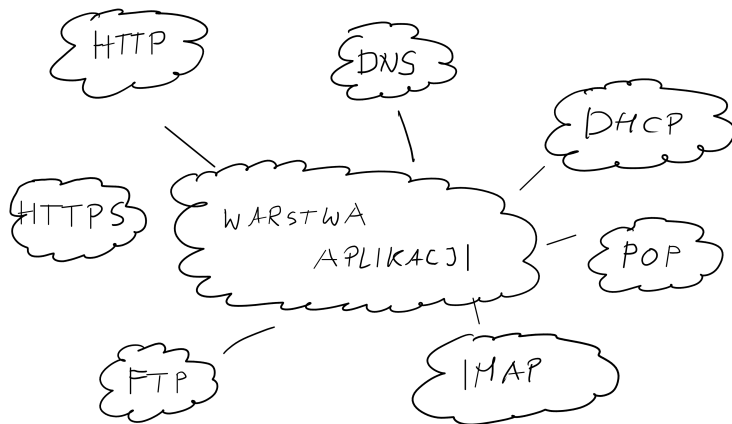
OSI



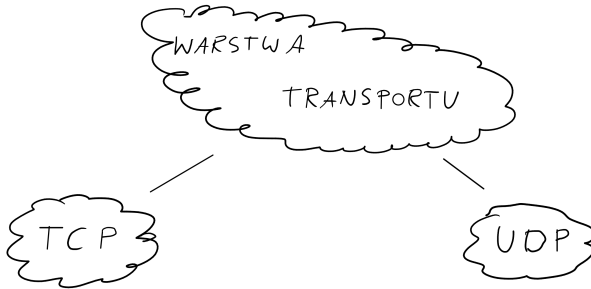
TCP/IP



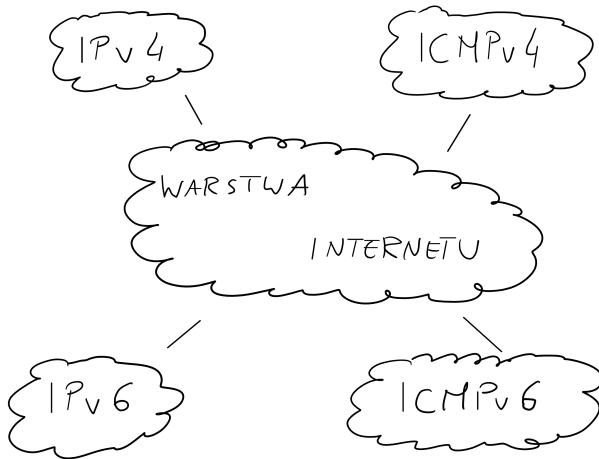
Model warstwowy sieci



Model warstwowy sieci



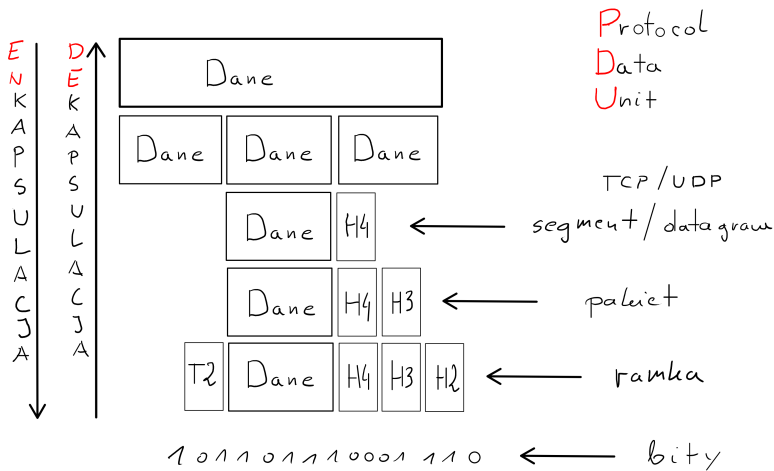
Model warstwowy sieci



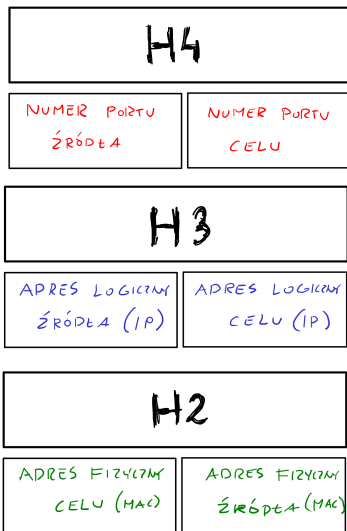
Model warstwowy sieci



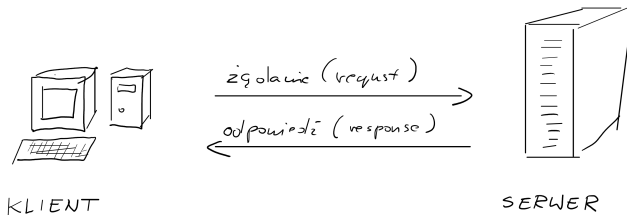
Model warstwowy sieci

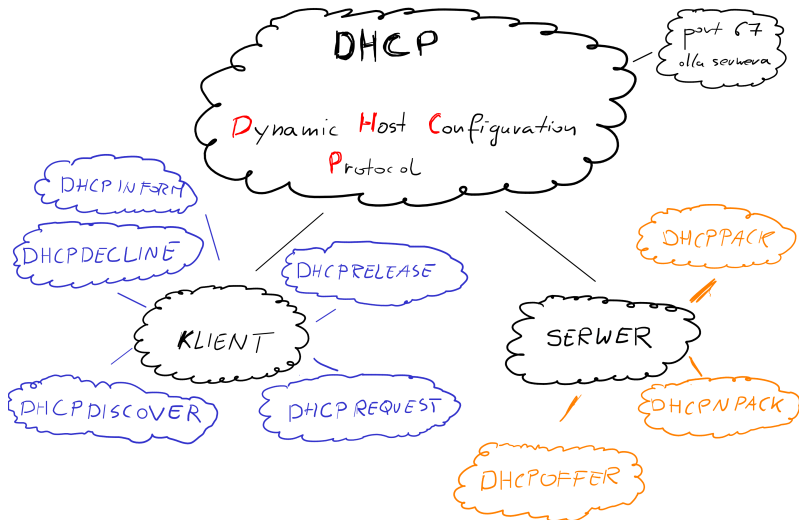


Model warstwowy sieci



Warstwa 7





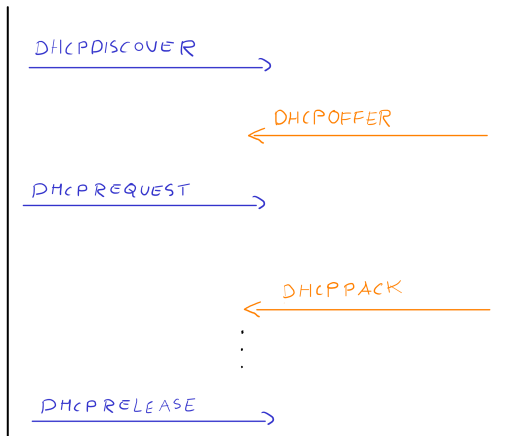
Warstwa 7

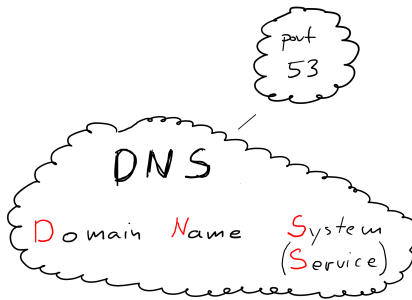


KLIENT
DHCP

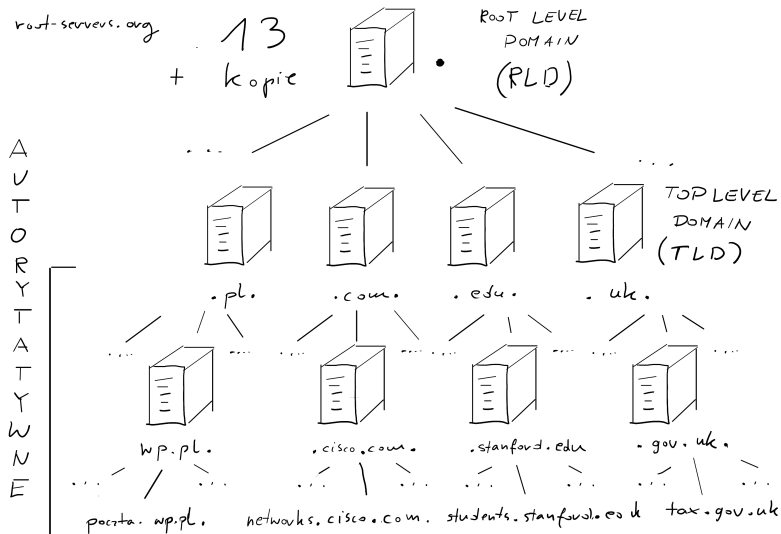


SERWER
DHCP

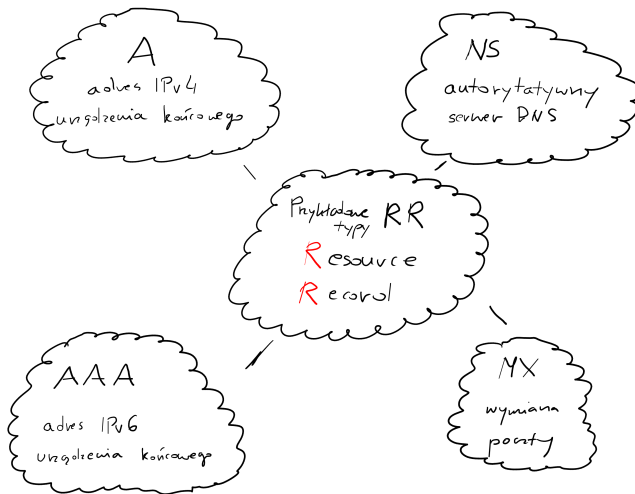




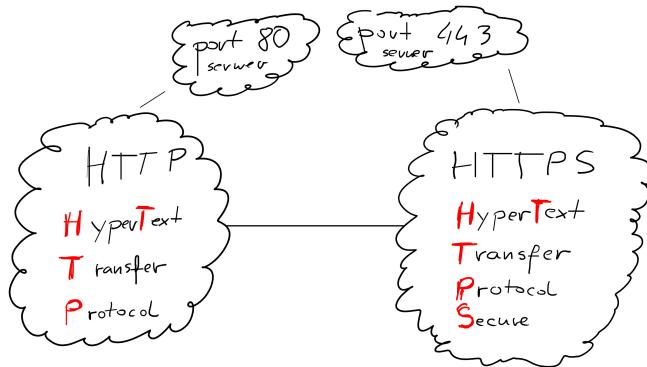
Warstwa 7

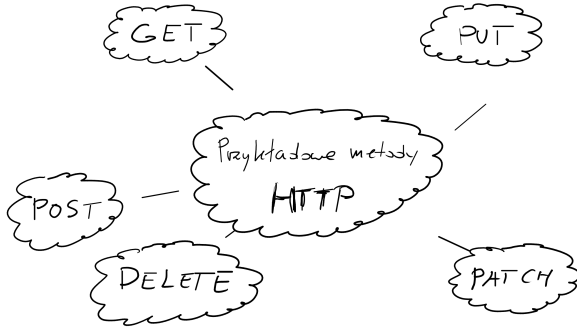


Warstwa 7

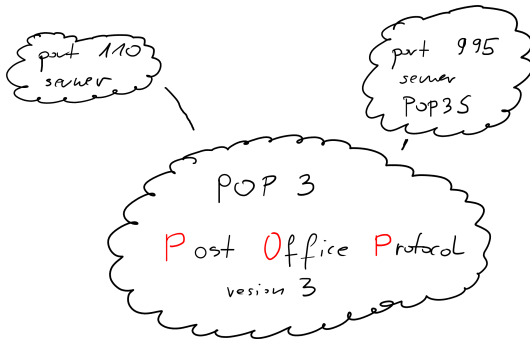


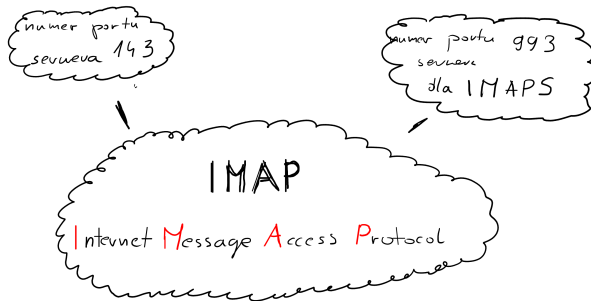
Warstwa 7



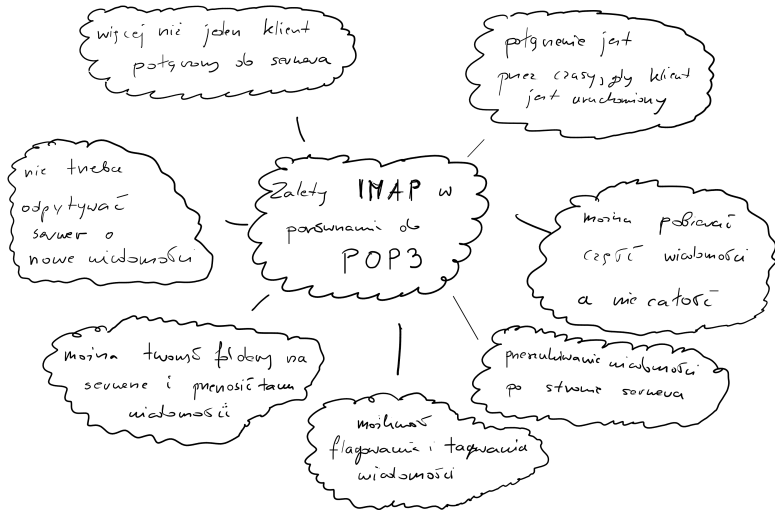


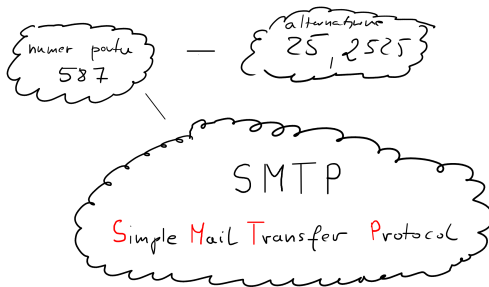
Warstwa 7

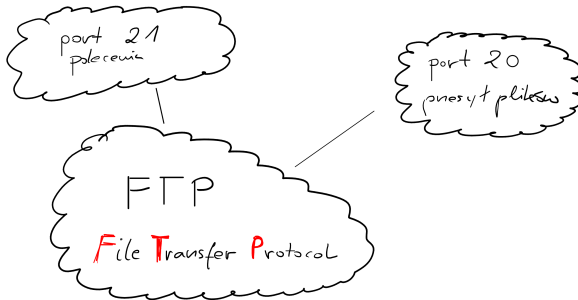




Warstwa 7

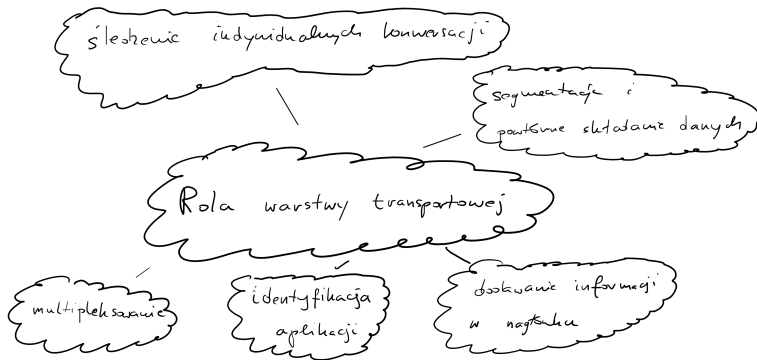


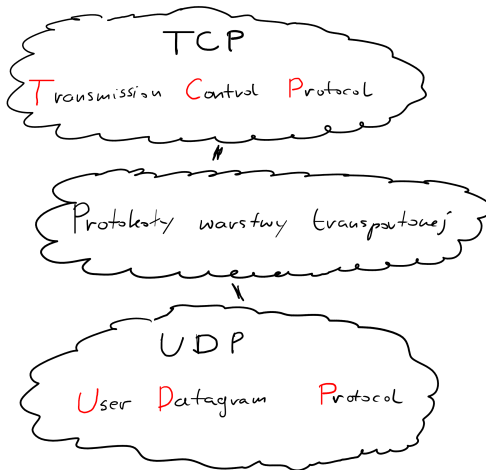


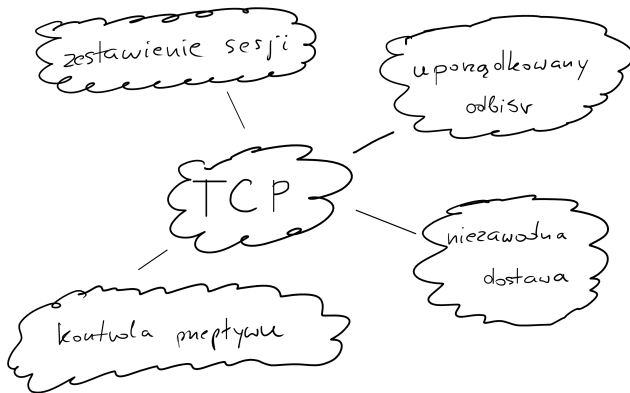


Warstwa 7

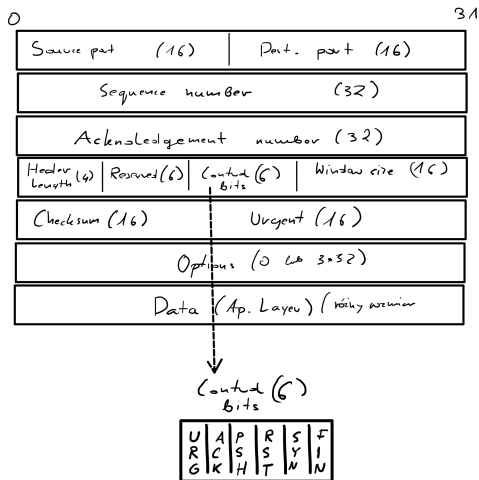






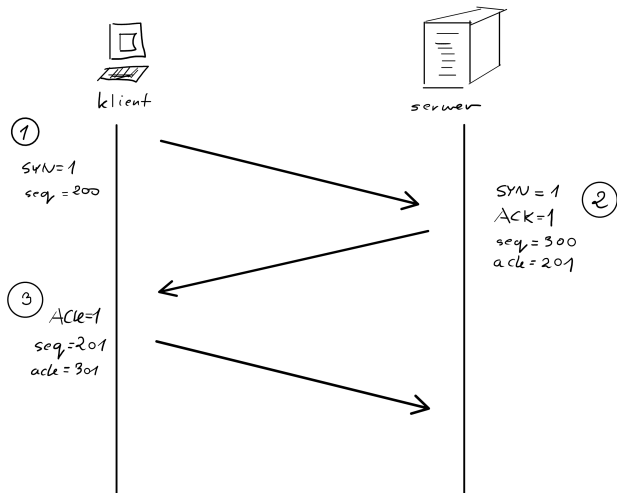


Warstwa 4



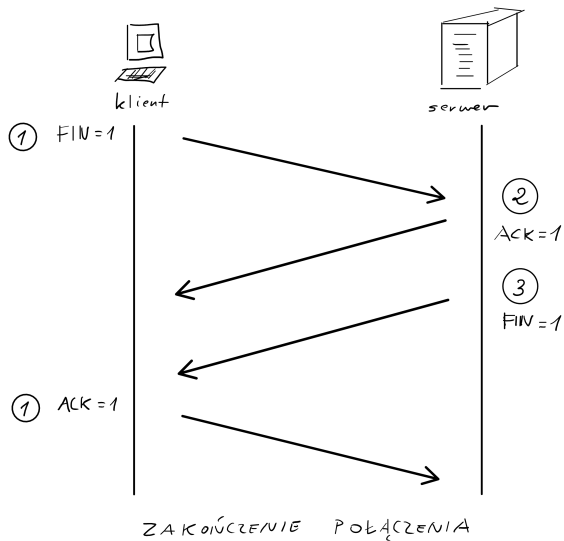
NAGŁÓWEK TCP

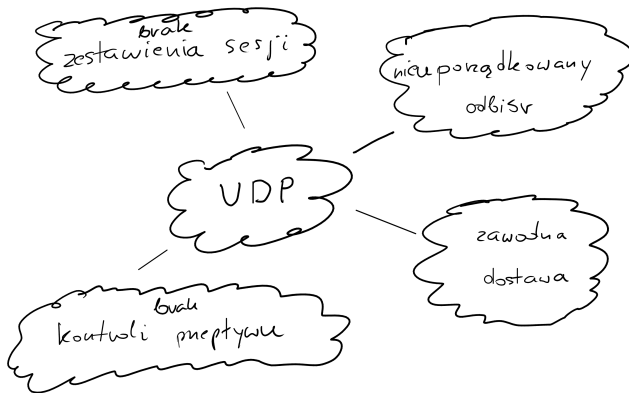
Warstwa 4

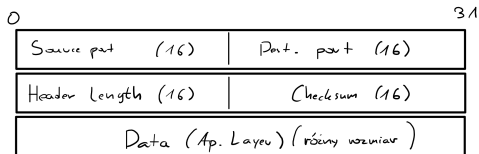


UZGÓDNIANIE TRÓJETAPOWE

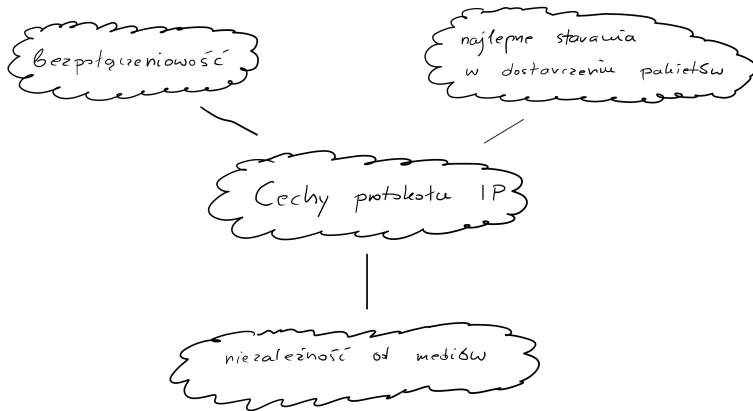
Warstwa 4



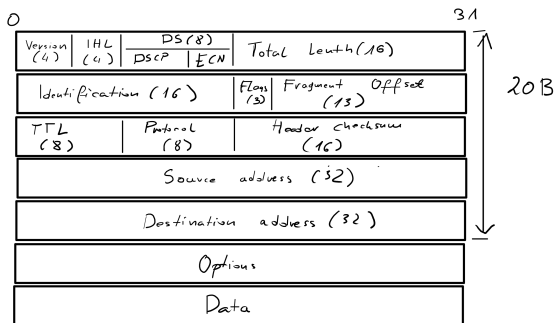




NAGŁÓWEK UDP

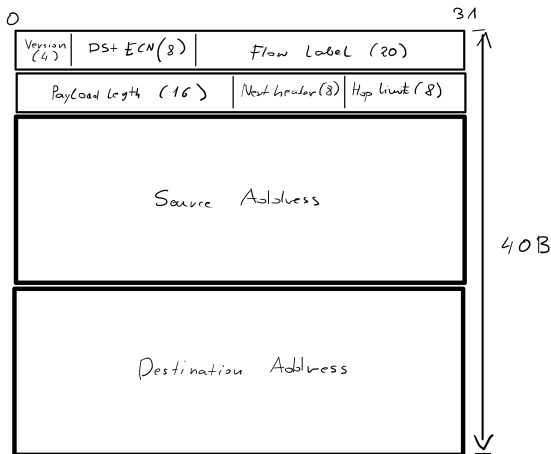


Warstwa 3



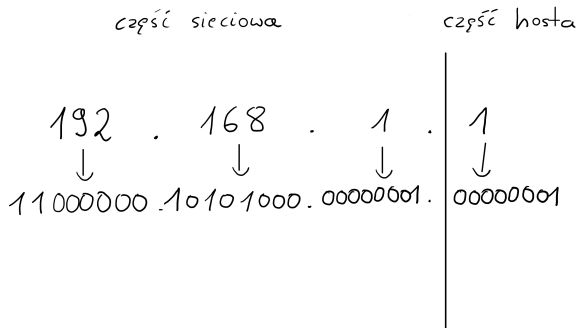
NAGŁÓWEK IPv4

Warstwa 3



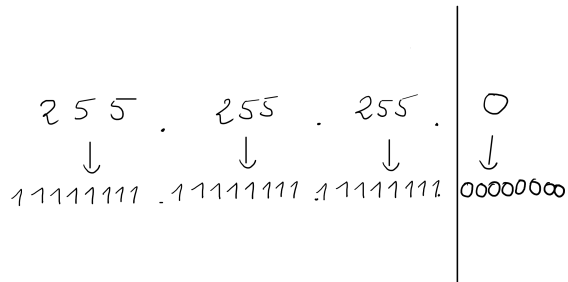
NAGŁÓWEK IPv6

Warstwa 3



STRUKTURA ADRESU IPv4

Warstwa 3



dlugość prefiksu /24

MASKA PODSIECI

Warstwa 3

AND

0	1	0
1	0	0
0	0	0
1	1	1

ADRES SIECI

192 . 168 . 1 . 1

adres
hosta

11000000 . 10101000 . 00000001 . 00000001

AND

255 . 255 . 255 . 0

maska
podsieci

11111111 . 11111111 . 11111111 . 00000000

AND

11000000 . 10101000 . 00000001 . 00000001

11111111 . 11111111 . 11111111 . 00000000

11000000 . 10101000 . 00000001 . 00000000

192 . 168 . 1 . 0

adres
sieci

ADRESY HOSTÓW

192 . 168 . 1 . 1

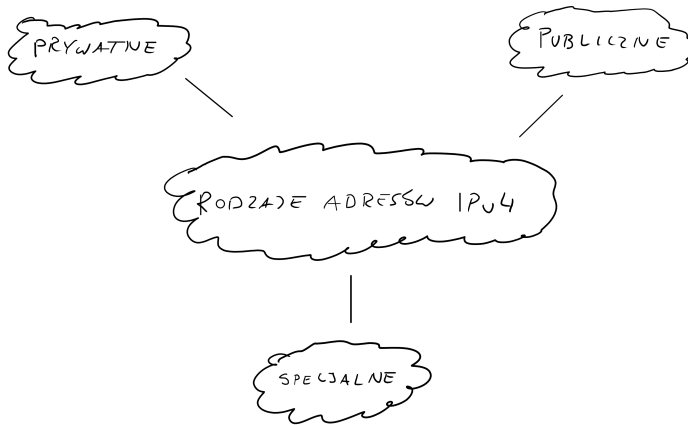
do

192 . 168 . 1 . 254

ADRES ROZGŁOSZENIOWY

192 . 168 . 1 . 255

Warstwa 3



PRYWATNE ADRESY IPv4 (RFC 1918)

10.0.0.0 / 8

10.0.0.0 - 10.255.255.255

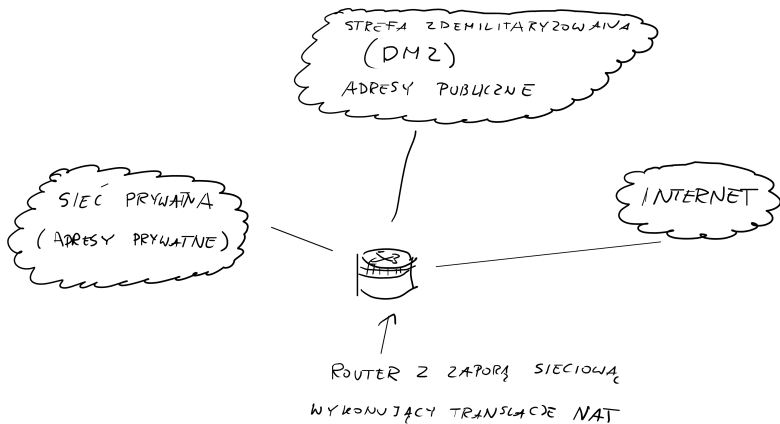
172.16.0.0 / 12

172.16.0.0 - 172.31.255.255

192.168.0.0 / 16

192.168.0.0 - 192.168.255.255

Warstwa 3



SPECJALNE ADRESY IPv4

PĘTLI ZWROTNEJ

127.0.0.0/8

127.0.0.1 - 127.255.255.254

LINK-LOCAL

169.254.0.0/16

169.254.0.1 - 169.254.255.254

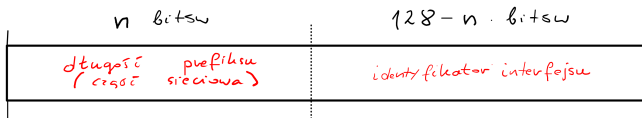
Warstwa 3

H: H: H: H: H: H: H: H

0000 - ffff

0000000000000000 - 1111111111111111

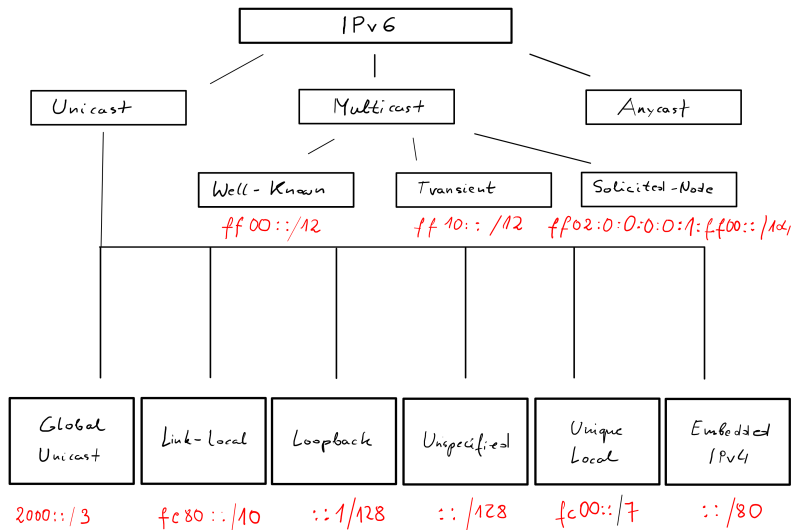
Warstwa 3



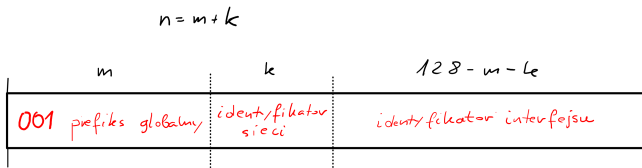
Rekomendowane $n = 64$

/64

Warstwa 3

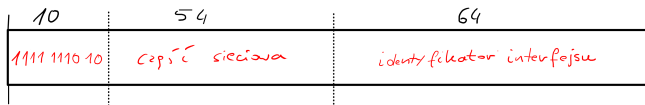


Global Unicast Address (GUA)



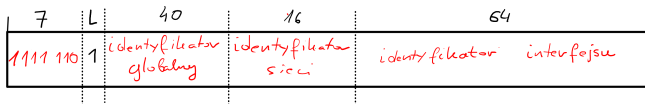
`2000::/3`

Link-Local Unicast Address (LLA)

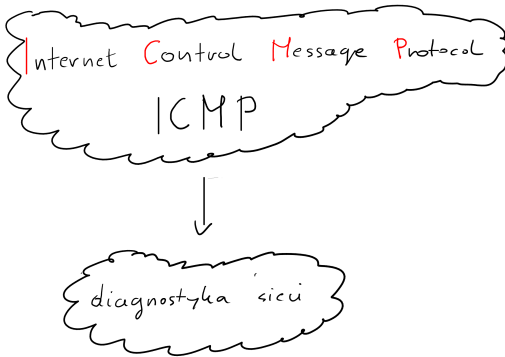


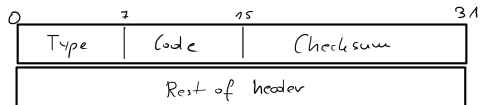
$fe80::/10$

Unique Local Address
(ULA)



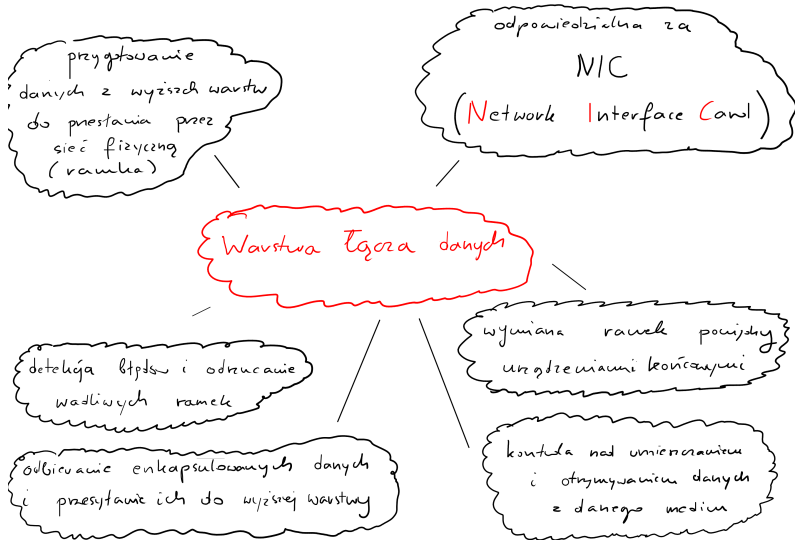
fc00::/7





NAGŁÓWEK ICMP

Warstwa 2



Warstwa 2

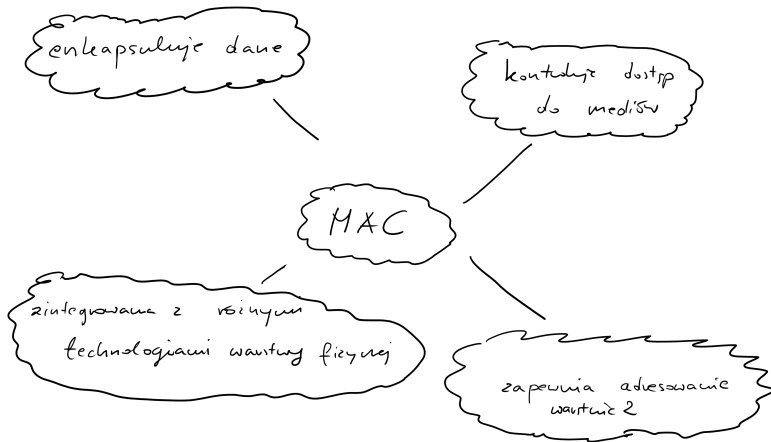
Warstwa sieci	Protokoły warstwy sieci			
Warstwa Łączna danych	Podwarstwa LLC Logical Link Control	LLC IEEE 802.2		
	Podwarstwa MAC Media Access Control	Ethernet IEEE 802.3	WLAN IEEE 802.11	WPAN IEEE 802.15
Warstwa fizyczna		Standardy Ethernet	Standardy WLAN	Standardy WPAN: IrDA, Bluetooth i tp

Warstwa 2

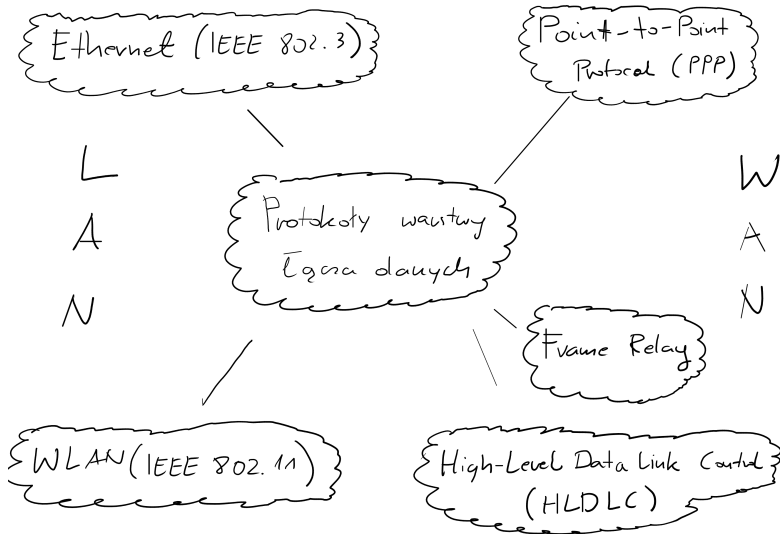
Komunikuje się pomiędzy oprogramowaniem sieciowym
a urządzeniami z niższej warstwy

LLC

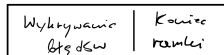
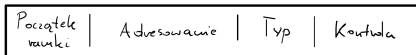
Wstawia w ramkę informacje o protokole warstwy 3
(IPv4, IPv6)



Warstwa 2



Struktura ramki



Struktura adresu MAC

48 bitów = 6 bajtów

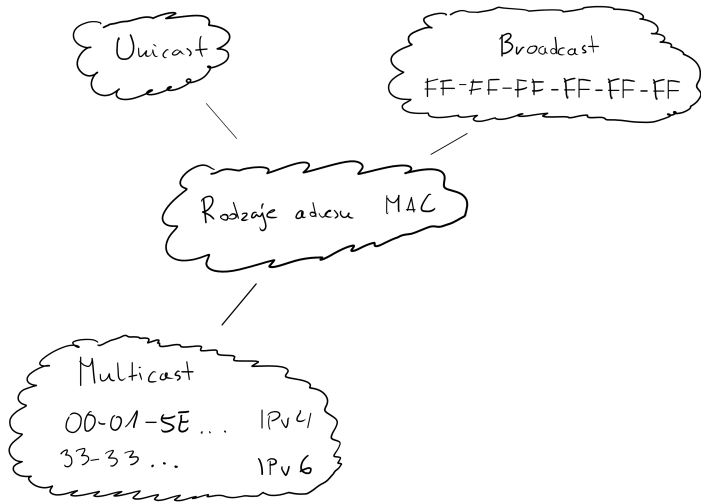
00-60-2F-3A-07-BC

OUI

Organizationally

Unique

Identifier



Ramka Ethernet

PRE + SFD (8)	Docelowy MAC (6)	Źródłowy MAC (6)	Typ / Protokół (2)	Dane (46 - 1500)	FCS (4)
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PRE - preambula

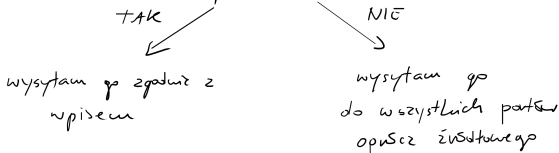
SFD - start of frame delimiter

FCS - frame check sequence

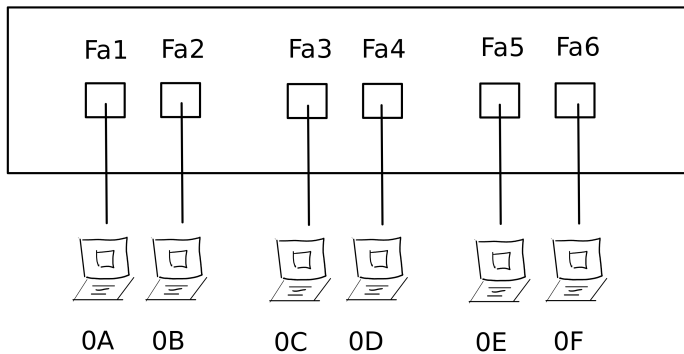
Adres IPv4 jest w tabeli ?



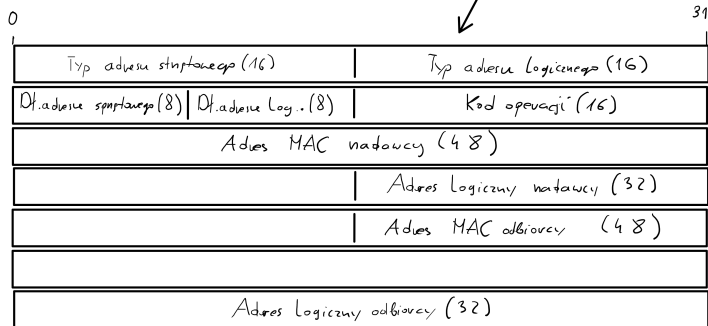
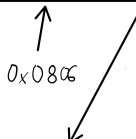
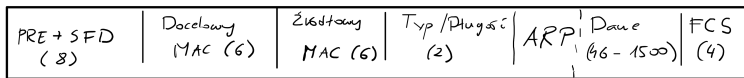
Mam wpis w tabeli MAC ?



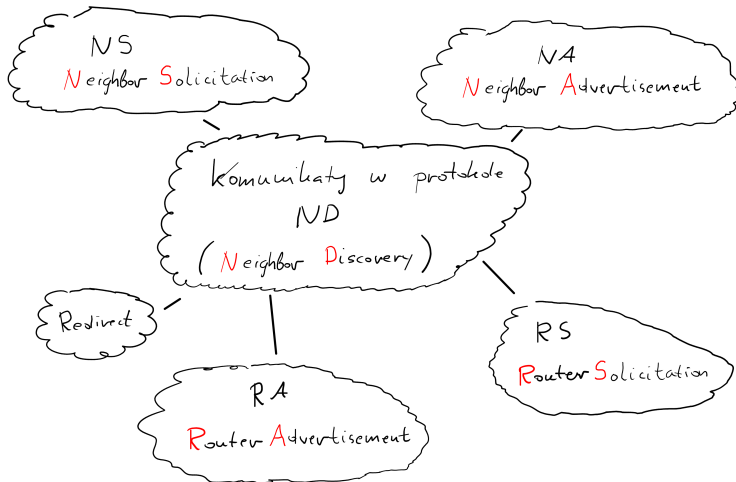
Warstwa 2



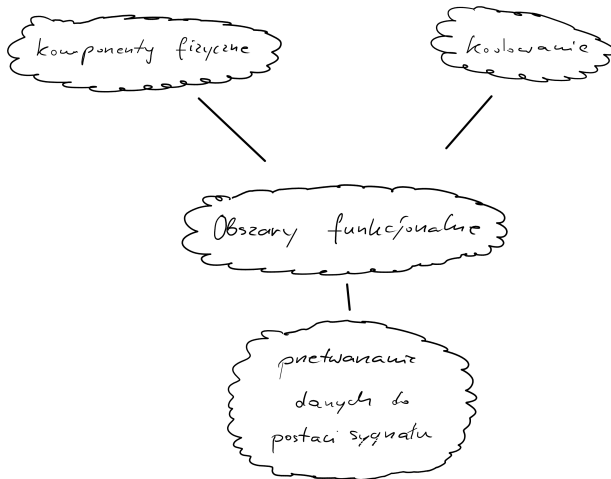
Warstwa 2



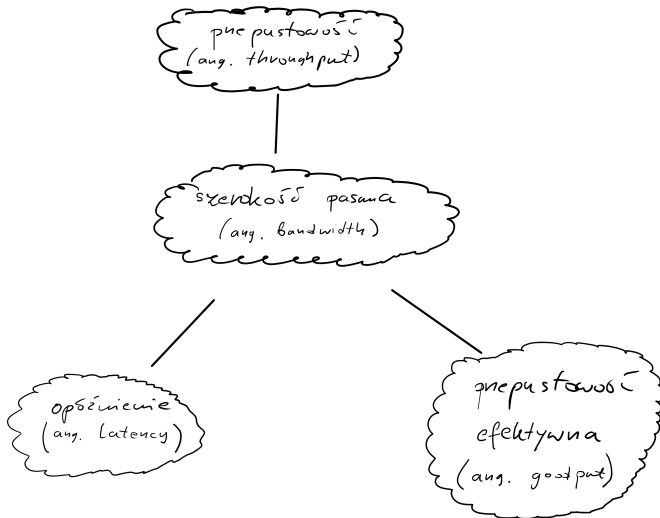
Warstwa 2



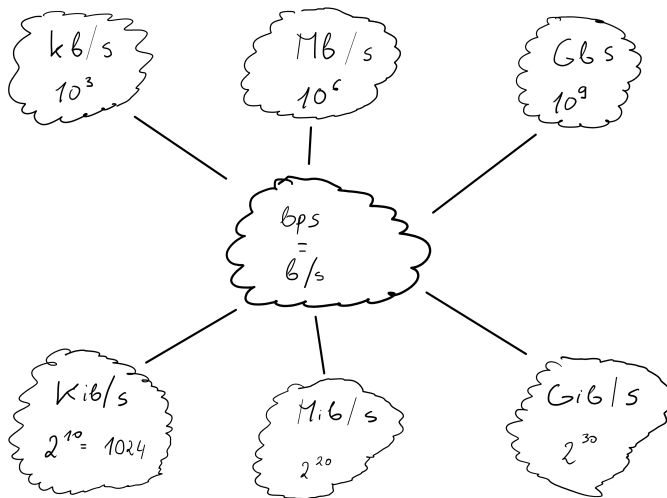
Warstwa 1



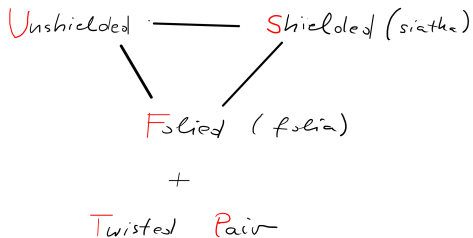
Warstwa 1



Warstwa 1



Warstwa 1

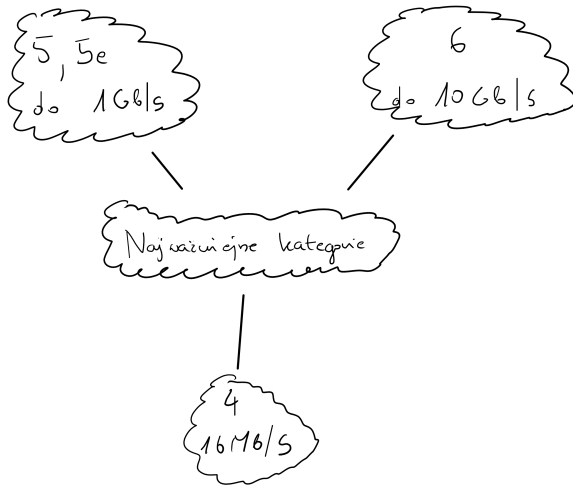


X/YTP

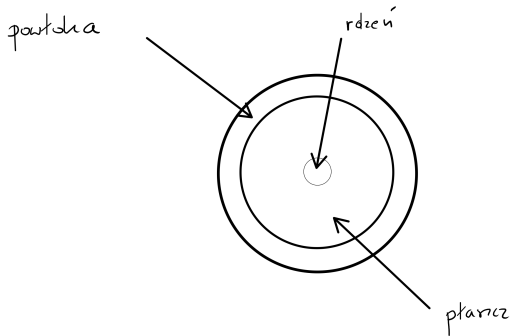
$X = \{U, S, F, SF\}$

$Y = \{U, F\}$

Warstwa 1



Warstwa 1





Warstwa 1

