Practic Cauputer Networks

Tasks

Generated Data

Network IP: 125.134.76.0

Mask: 255.255.254.0 (/23)

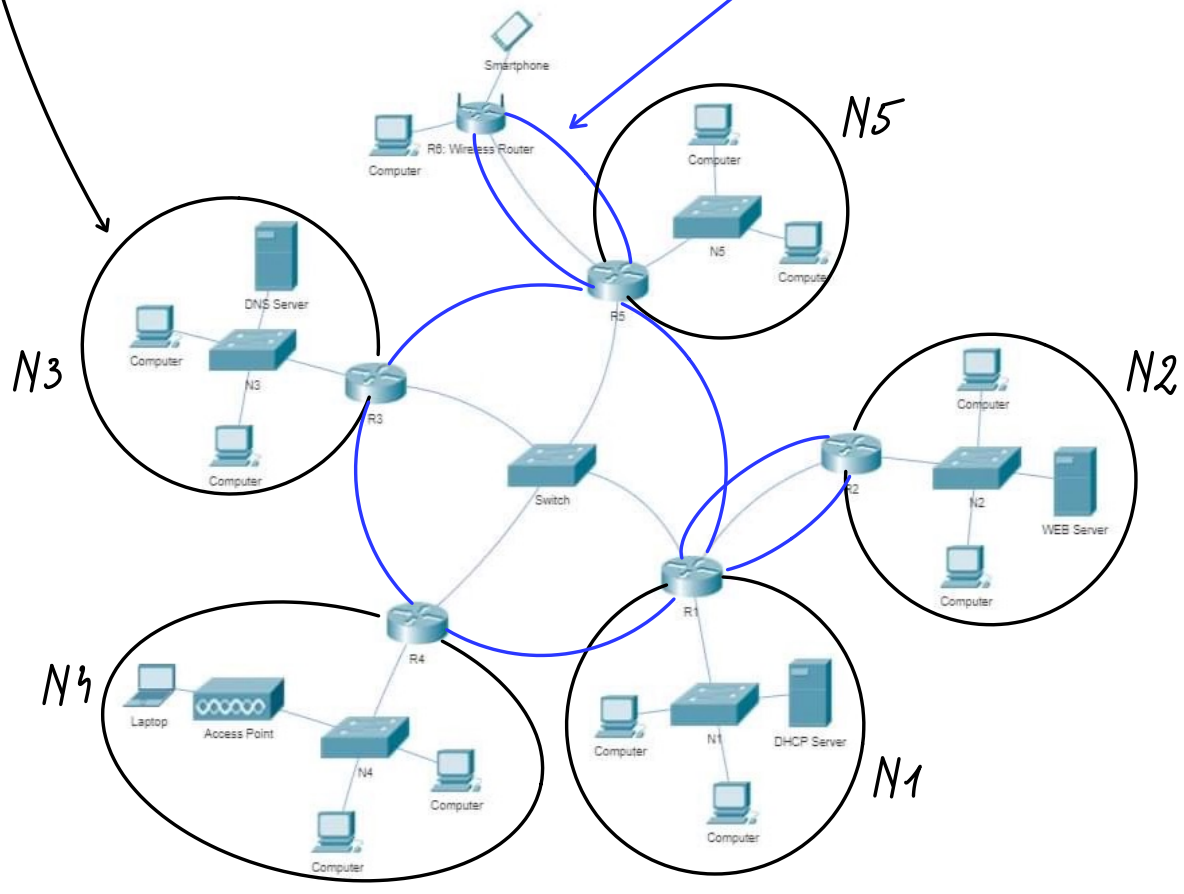
Sub networks:

- N1: 112 IP's +3 IP's
- N2: 64 IP's +3
- N3: 32 IP's +3
- N4: 24 IP's +2
- N5: 8 IP's +2

Other networks:

- N1345 4 IP's + 2
- N12 : 2 IP's + 2
- N5w : 2 IP's + 2

Network Topology



Practic Computer Networks

Computations

Network IP: 125.134.76.0
Mask: 255.255.254.0 (/23) $\Longrightarrow$ $x = 32 - 23 = 9$ (zeros)
$\Longrightarrow$ $2^9 = 512$ IPs
23 ones, 9 zeros

Sub Networks:

- N1: 112 IP's
- N2: 64 IP's
- N3: 32 IP's
- N4: 24 IP's
- N5: 8 IP's

Other networks:

- N1345 4 IP
- N12 : 2 IP
- N5w : 2 IP

IP addresses:

/23 $\Longrightarrow$ $2^9 = 512$ IP addresses
n devices (IP) + 1 router + 1 NA + 1 BA $\Longrightarrow$ n + 3

- N1: 112 + 3 = 115 <= 128 = 2^7 /25
- N2: 64 + 3 = 67 <= 128 = 2^7 /25
- N3: 32 + 3 = 35 <= 64 = 2^6 /26
- N4: 24 + 3 = 27 <= 32 = 2^5 /27
- N5: 8 + 3 = 11 <= 16 = 2^4 /28

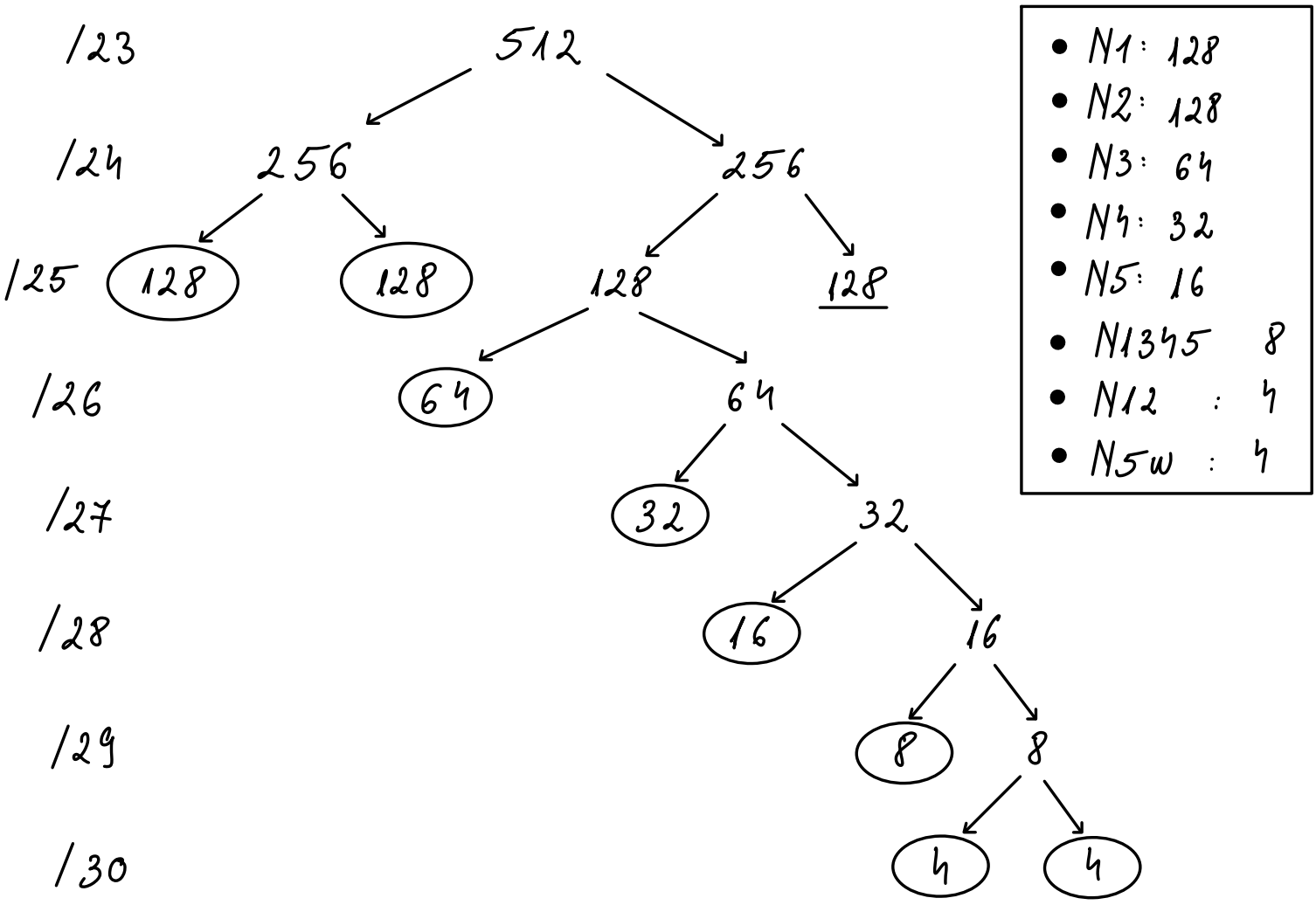
For the other networks we don't need a router, only 1 NA and 1 BA $\Longrightarrow$ n + 2

- N1345 $4+2=6 \Leftarrow 8=2^3/29$
- N12 : $2+2=4 \Leftarrow 4=2^2/30$
- N5w : $2+2=4 \Leftarrow 4=2^2/30$

Total IPs:

$128+128+64+32+16+8+4+4=384<512$

Recursive network split using a binary tree:



- N1: 128
- N2: 128
- N3: 64
- N4: 32
- N5: 16
- N1345 8
- N12 : 4
- N5w : 4

Start IP = Network Address (NA)
End IP = Broadcast Address (BA)

(IP) AND (NM) => NA
(IP) OR (NOT (NM)) => BA

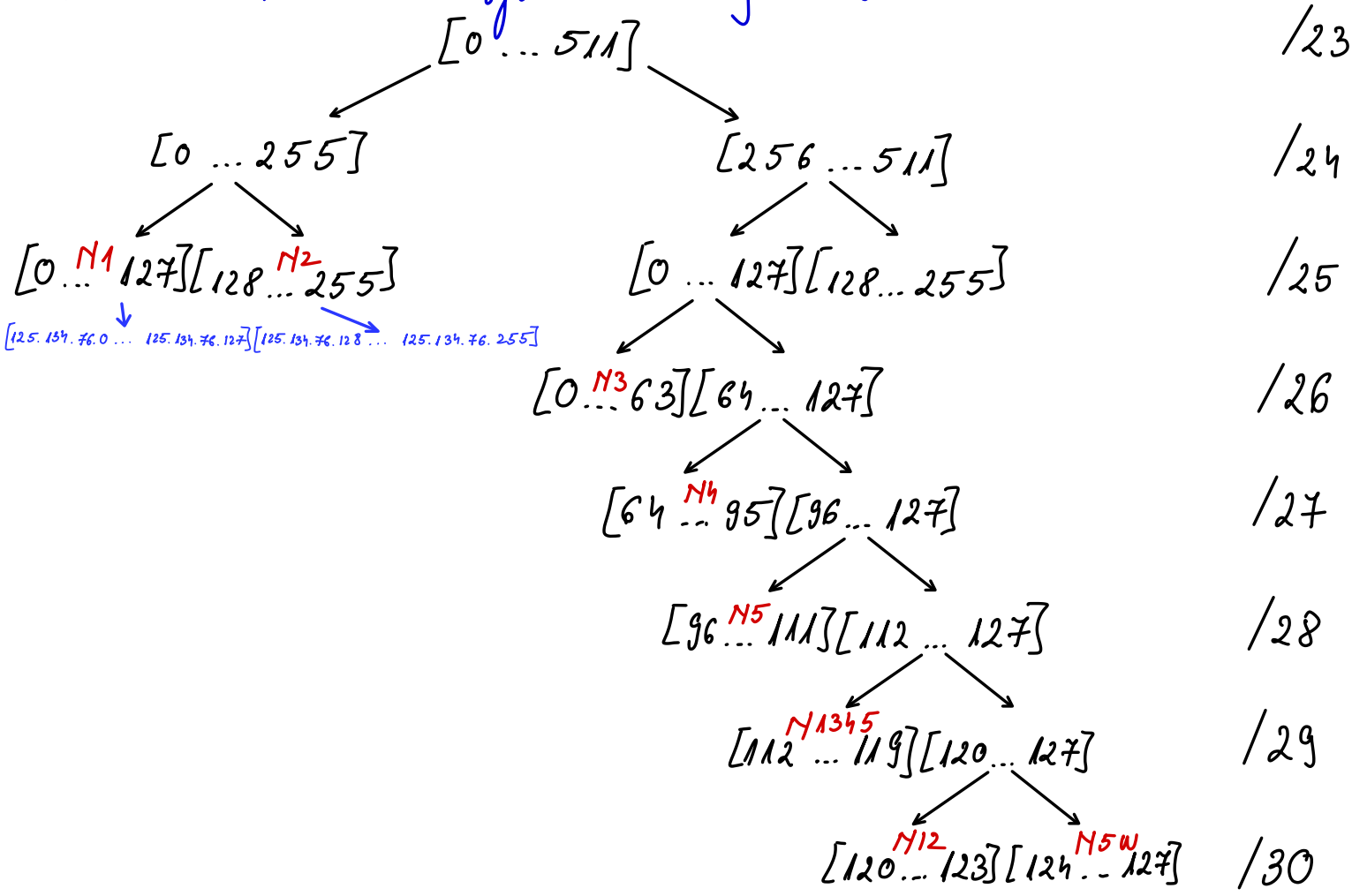
NA = 125.134.76.0

BA = 125.134.76.0 OR

0.0.1.255

125.134.77.255 ⟹ BA = 125.134.77.255

Recursin network split using internals:



Enumerating the networks:

N1: 125.134.76.0 /25 — 255.255.255.128

N2: 125.134.76.128 /25 — 255.255.255.128

N3: 125.134.77.0 /26 — 255.255.255.192

N4: 125.134.77.64 /27 — 255.255.255.224

N5: 125.134.77.96 /28 — 255.255.255.240

N1345 125.134.77.112 /29 — 255.255.255.248

N12 : 125.134.77.120 /30 — 255.255.255.252

N5w : 125.134.77.124 /30 — 255.255.255.252

N1 $\Rightarrow$ R1 = .76.1 $\Rightarrow$ S1 = .76.2

N2 $\Rightarrow$ R2 = .76.129 $\Rightarrow$ S2 web = .76.130

N3 $\Rightarrow$ R3 = .77.1 $\Rightarrow$ S3 dns = .77.2

N4 $\Rightarrow$ R4 = .77.65

N5 $\Rightarrow$ R5 = .77.97

N1345 $\Rightarrow$ R1 = .77.113 R3 = .77.114 R4 = .77.115 R5 = .77.116

N12 $\Rightarrow$ R1 = .77.121 R2 = .77.122

N5w $\Rightarrow$ R5 = .77.125 Rw = .77.126

Project made by
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