Practic Computer Networks

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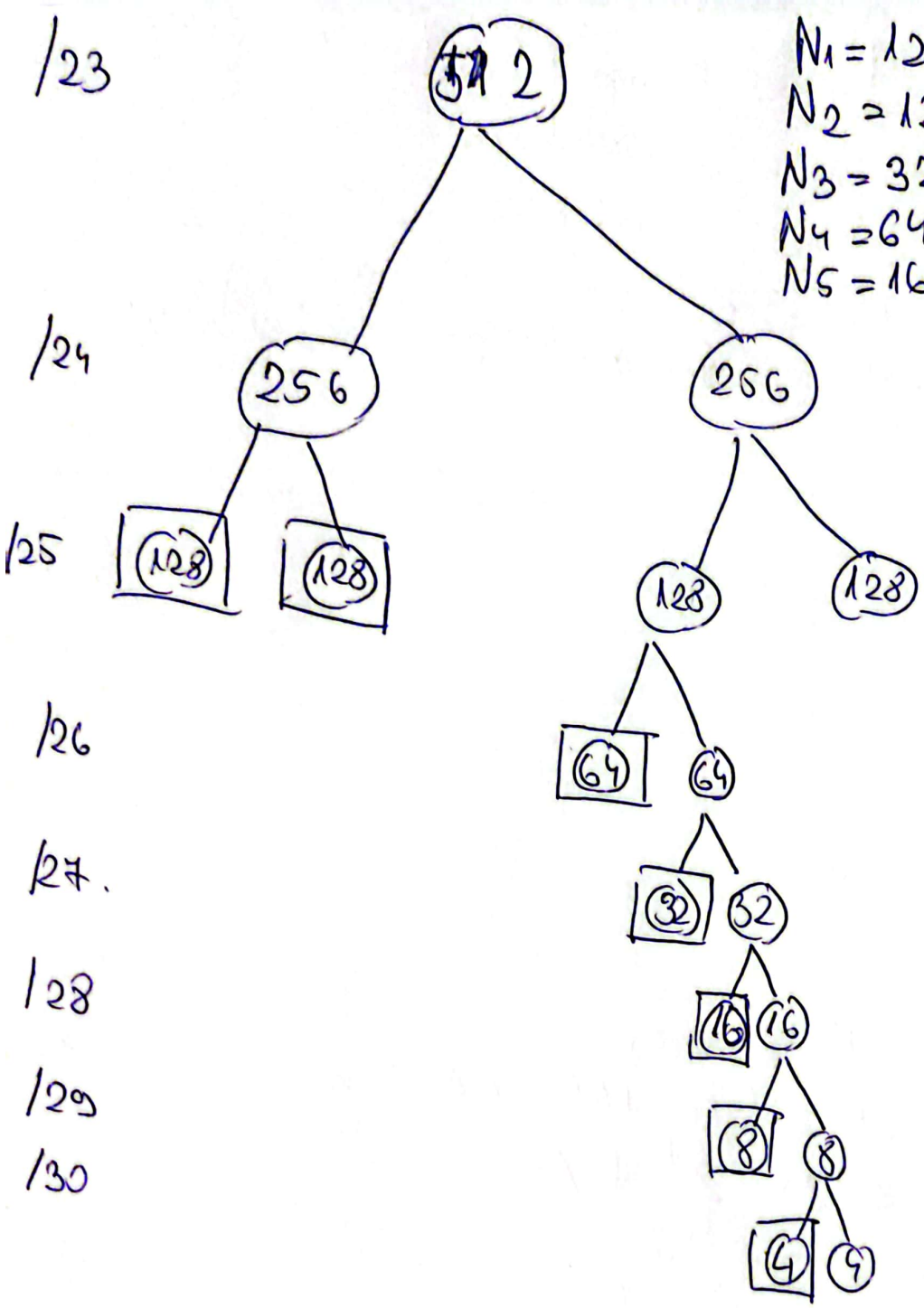
Computations

Network IP: 181. 172. 90. 0
Mask: 255. 255. 254. 0 (/23) => x = 32 - 23 = 9 => $2^9 = 512$
Sub networks:
- N_1: 112 IP's
- N_2: 96 IP's
- N_3: 24 IP's
- N_4: 40 IP's
- N_5: 8 IP's

Extra:
- N_{12354}: 5 IP's *
- N_{SW}: 2 IP's

/23 => 2^9 = 512 IP addresses
n devices (IP) + 1 router + 1 NA + 1 BA => n + 3
N_1: 112 + 3 = 115 <= 128 = 2^7 /25
N_2: 96 + 3 = 99 <= 128 = 2^7 /25
N_3: 24 + 3 = 27 <= 32 = 2^5 /27
N_4: 40 + 3 = 43 <= 64 = 2^6 /26
N_5: 8 + 3 = 11 <= 16 = 2^4 /28
For the next 2 networks we don't need a router, only 1 NA and 1 BA => n + 2
N_{12354}: 5 + 2 = 7 <= 8 = 2^3 /29
N_{SW}: 2 + 2 = 4 <= 4 = 2^2 /30
128 + 128 + 32 + 64 + 16 + 8 + 4 = 380 < 512



$N_1 = 128$
$N_2 = 128$
$N_3 = 32$
$N_4 = 64$
$N_5 = 16$

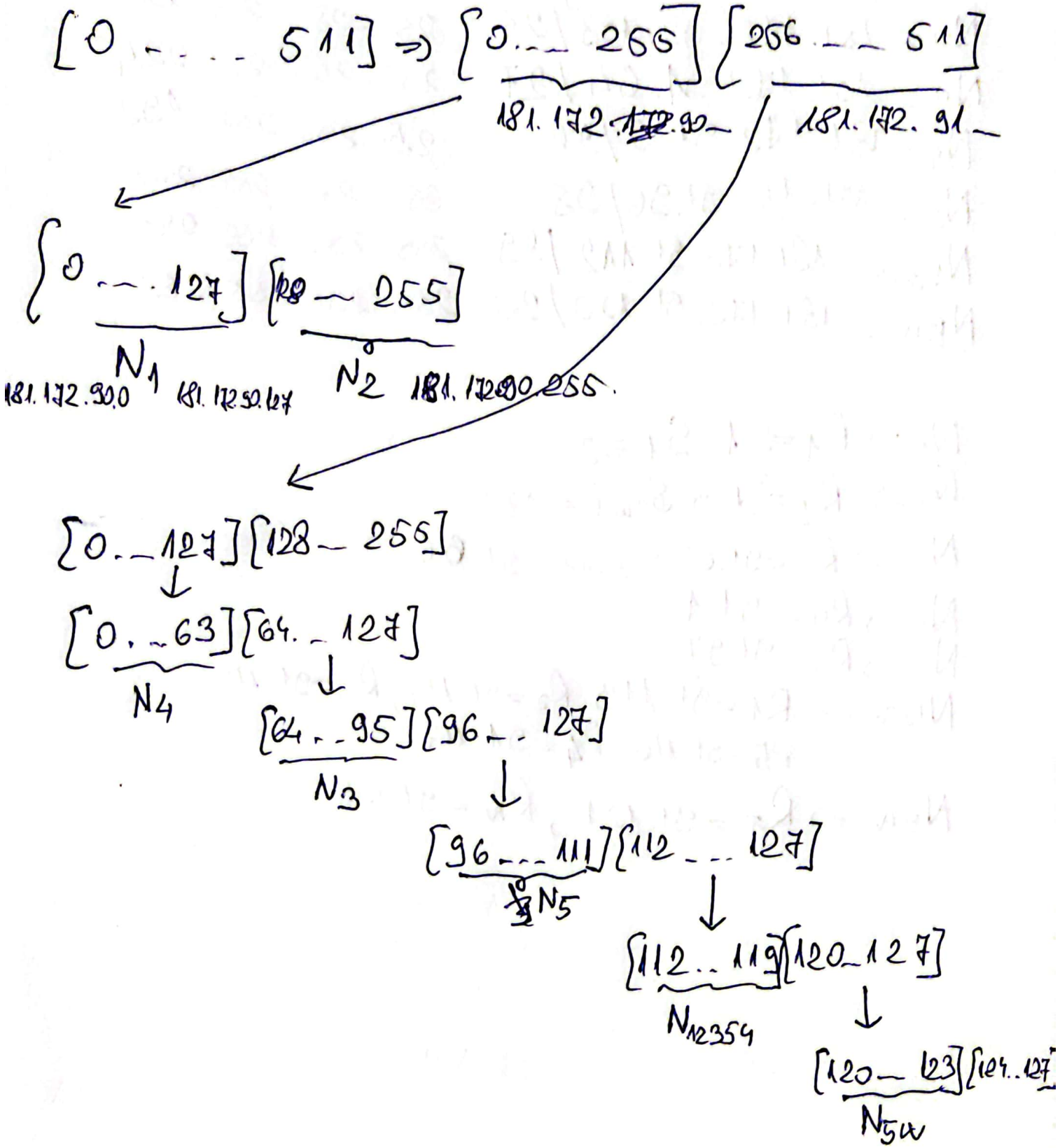
$N_{12354} = 8$
$N_{5W} = 4$

The network address (NA) = 181.172.90.0
BA results from IP or (not) mask.

181.172.90.0 or
0.0.1.255
181.172.91.255. = BA.

We have addresses from 181.172.90.0 to 181.172.91.255
The first 256 addresses will be 181.172.90.—
The last 256 addresses will be 181.172.91.—

Recursive network split using intervals



Enumerating the networks

N_1 = 181.172.90.0 /25 — 255.255.255.128
N_2 = 181.172.90.128 /25 — 255.255.255.128
N_3 = 181.172.91.64 /27 — 255.255.255.224
N_4 = 181.172.91.0 /26 — 255.255.255.192
N_5 = 181.172.91.96 /28 — 255.255.255.240
N_{12354} = 181.172.91.112 /29 — 255.255.255.248
N_{5W} = 181.172.91.120 /30 — 255.255.255.252

$N_1 \Rightarrow R_1 = 91.1$ $S_1 = 90.2$
$N_2 \Rightarrow R_2 = 90.129$ $S_{2web} = 90.130$
$N_3 \Rightarrow R_3 = 91.65$ $S_{3dns} = 91.66$
$N_4 \Rightarrow R_4 = .91.1$
$N_6 \Rightarrow R_5 = 91.97$
$N_{12354} \Rightarrow R_1 = 91.113$, $R_2 = 91.114$, $R_3 = 91.115$
$R_5 = 91.116$, $R_4 = 91.117$
$N_{5W} \Rightarrow R_5 = 91.121$, $R_W = 91.122$