

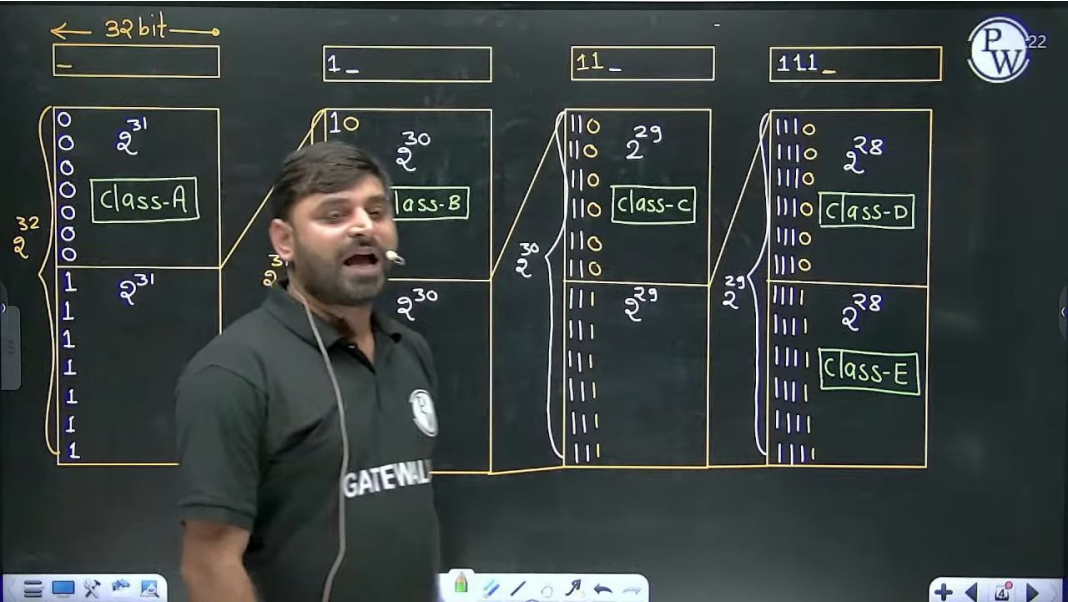


L2

Generated on October 19, 2024

Summary

AI Notes	AI Slides	Text Notes	Screenshots
✦ 0	✦ 1	☐ 0	📷 16



PW<sup>27</sup>

Note

No. of IP Addresses Present in class A =  $2^{31}$   
 " " " " " " class B =  $2^{30}$   
 class C =  $2^{29}$   
 class D =  $2^{28}$   
 class E =  $2^{28}$

PW

▶ 24:49

OR

PW<sup>40</sup>

PW

GATEWALLA

▶ 37:05

## (Hexadecimal)<sub>16</sub>

0000 → 0

0001 → 1

0010 → 2

0011 → 3

0100 → 4

0101 → 5

0110 → 6

0111 → 7

1000 → 8

1001 → 9

1010 → 10 → A

1011 → 11 → B

1100 → 12 → C

1101 → 13 → D

1110 → 14 → E

1111 → 15 → F

{0-9, A-F}

▶ 48:56

## IP Address Representation

Binary: 11001000 · 11111100 · 00111111 · 11110111

Decimal: 200 · 252 · 63 · 247

Hexadecimal: C8: FC: 3F: F7

▶ 48:56

class A  $\rightarrow 2^{31} \rightarrow 0$

NID: 8 bit  
HID: 8 bit, 8 bit, 8 bit

0 7 bit

0 0000000  $\rightarrow 0$  X  
 0 0000001  $\rightarrow 1$   
 0 0000010  $\rightarrow 2$   
 0 0000011  $\rightarrow 3$   
 ...  
 0 1111110  $\rightarrow 126$   
 0 1111111  $\rightarrow 127$  X

▶ 58:37

Note

Why we have all 0's or all 1's either in the NID or in the HID of any IP Address. These IP Addresses are reserved for some special purpose, so we can't assign these IP Addresses to any computer.

▶ 1:00:25

$2^8$  Networks  
 $\Downarrow$   
 $2^7 - 2$  Networks  
 126 Networks

$2^{24}$  Host/Network  
 $\Downarrow$   
 $2^{24} - 2$  Host/Network

$HID = 24 \text{ bit}$

$10.0.0.0 \quad \times$   
 $10.255.255.255 \quad \times$

$00000000.00000000.00000000 \rightarrow 0.0.0 \quad \times$   
 $\vdots$   
 $11111111.11111111.11111111 \rightarrow 255.255.255 \quad \times$

▶ 1:11:52

$C/955-B \rightarrow 2^{30} \rightarrow 10 \text{ (128-191)}$

$NID = 16 \text{ bit}$        $HID = 16 \text{ bit}$

$\boxed{8} \cdot \boxed{8} \cdot \boxed{8} \cdot \boxed{8}$

$\downarrow$   
 $\boxed{10} \mid 6 \text{ bit}$

$10 \text{ ---}$   
 $10 \text{ } 000000 \rightarrow 128$   
 $10 \text{ } 000001 \rightarrow 129$   
 $\vdots$   
 $10 \text{ } 111111 \rightarrow 191$

$255$   
 $64$   
 $\hline 191$

▶ 1:18:22



PW 31

128.0	129.0	130.0	131.0
128.1	129.1	130.1	131.1
128.2	129.2	130.2	131.2
...	...	...	...
128.255	129.255	130.255	131.255

256

64

$256 \times 64 = 2^8 \times 2^6 = 2^{14}$  Networks

WALLAH

▶ 1:28:31

PW 36

Class-C  $\rightarrow 2^{29} \rightarrow 110$  (192-223)

NID = 24 bit

HID

8	8	8	8
---	---	---	---

110 5 bit

110 - - - -

110 00000  $\rightarrow 192$

110 00001  $\rightarrow 193$

...

110 11111  $\rightarrow 223$

255

32

223

GATEWAY

▶ 1:33:57

class-C  $\rightarrow 2^{29} \rightarrow 110 (192-223)$

NID=24 bit

8	8	8	8
---	---	---	---

10 5 bit

110 00000  $\rightarrow 192$

110 00001  $\rightarrow 193$

111  $\rightarrow 223$

32

255  
32  
223

▶ 1:35:53

class-C  $\rightarrow 2^{29} \rightarrow 110 (192-223)$

NID=24 bit

8	8	8	8
---	---	---	---

110 5 bit

110 00000  $\rightarrow 192$

110 00001  $\rightarrow 193$

110 11111  $\rightarrow 223$

32

No. of n/w's =  $32 \times 2^{16}$   
 $= 2^5 \times 2^{16} = 2^{21}$

255  
32  
223

▶ 1:36:58

class-D  $\rightarrow 2^{28} \rightarrow 1110$  (224-239)

Diagram showing four 8-bit boxes. The first box is labeled '1110 | 4bit'.

1110 ----

1110 0000  $\rightarrow 224$

1110 0001  $\rightarrow 225$

1110 1111  $\rightarrow 239$

Note

- ① No Network-id and No Host-id in class-D
- ② class D is used For Multicasting

▶ 1:42:36

class-E  $\rightarrow 2^{28} \rightarrow 1111$  (240-255)

Diagram showing four 8-bit boxes. The first box is labeled '1111 | 4bit'.

1111 ----

1111 0000  $\rightarrow 240$

1111 0001  $\rightarrow 241$

1111 1111  $\rightarrow 255$

Note

- ① No Network-id and No Host-id in class E
- ② class E is reserved For research and Future Purpose.

▶ 1:48:41



# CLASSFUL ADDRESSING

Class A → 0	→	(1 - 126),	No. of IP Addresses = $2^{31}$
Class B → 10	→	(128 - 191),	No. of IP Addresses = $2^{30}$
Class C → 110	→	(192 - 223),	No. of IP Addresses = $2^{29}$
Class D → 1110	→	(224 - 239),	No. of IP Addresses = $2^{28}$
Class E → 1111	→	(240 - 255),	No. of IP Addresses = $2^{28}$

▶ 1:49:27

# CLASSFUL ADDRESSING

Class	Number of Networks	Number of hosts
Class A	$2^7 - 2 = 126$	$2^{24} - 2$ = 1,67,77,214 hosts
Class B	$2^{14} = 16,384$	$2^{16} - 2$ = 65,534 hosts
Class C	$2^{21} = 20,97,152$	$2^8 - 2$ = 254 hosts
Class D	No NID and HID, all 28 remaining bits are used to define multicast address	
Class E	No NID and HID, it is meant for research and future purpose	

▶ 1:52:02