

# CS & IT ENGINEERING

COMPUTER NETWORKS

IPv4 Addressing

Lecture No-07



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TOPICS TO  
BE  
COVERED

Types of  
Communication



# TYPES OF COMMUNICATION

- (i) Unicast Communication (1:1)
- (ii) Broadcast Communication (1:All)
- (iii) Multicast Communication (1:Many)

# Unicast Communication:

Transmitting the data from one computer to another computer is called as unicast communication.

It is one to one transmission.





2.



①

	S.I.P	D.I.P
Data	157.113.30.7	200.10.13.15

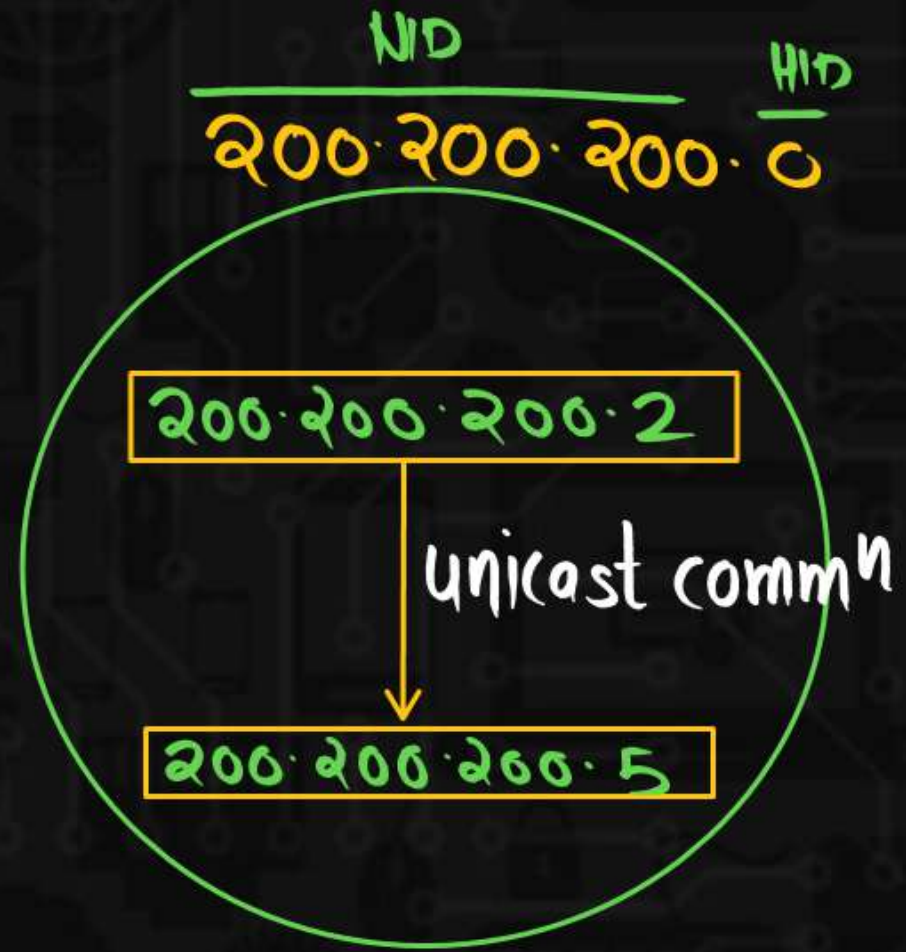
✓

②

	S.I.P	D.I.P
Data	200.10.13.15	157.113.30.7

✓

3.



Note: In unicast comm<sup>n</sup> Both Source and Destination can be Present in the same Network or Different Network.



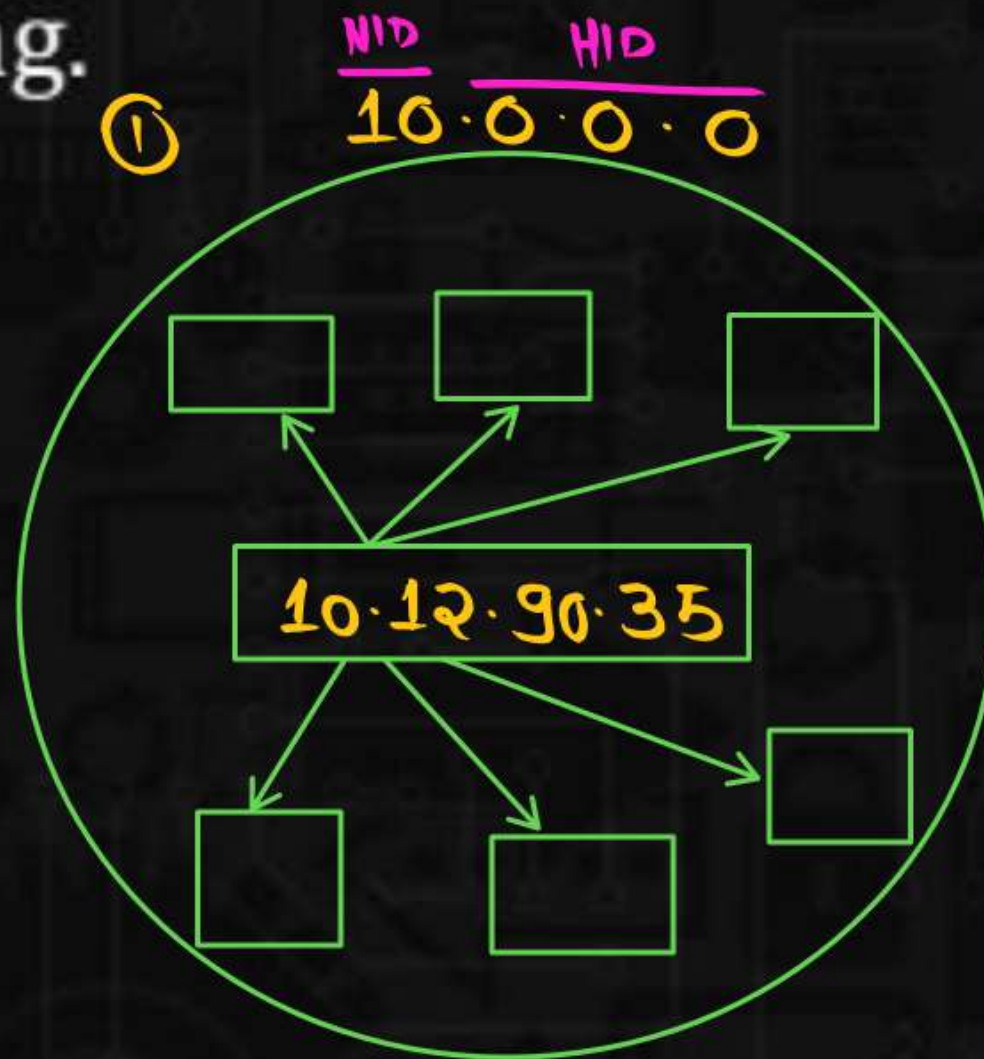
Broadcast communication (1:All)

Limited Broadcasting

Direct Broadcasting

## Limited Broadcasting:

Transmitting data from one computer to all other computer in the same network is called as Limited Broadcasting.



①

	S.I.P	D.I.P
Data	10.12.90.35	255.255.255.255 ✓

②

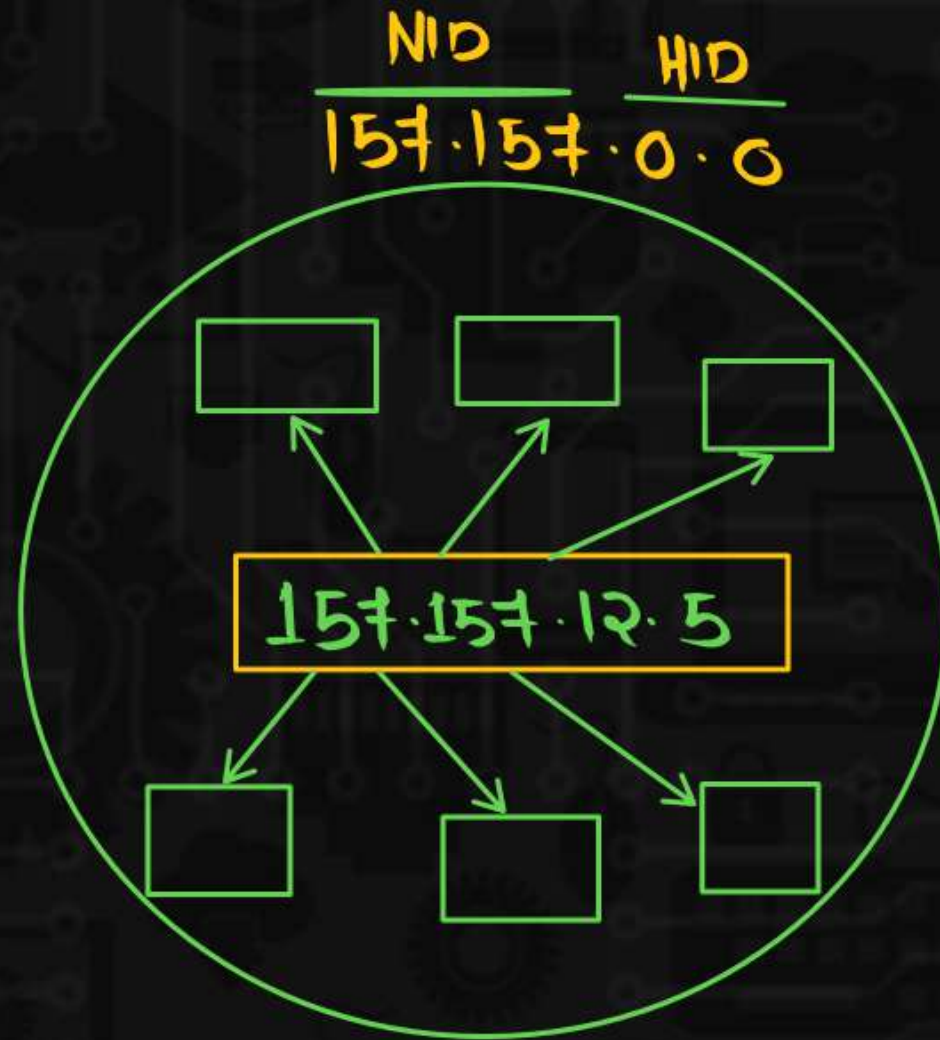
	S.I.P	D.I.P
Data	255.255.255.255	10.12.90.35 ✗



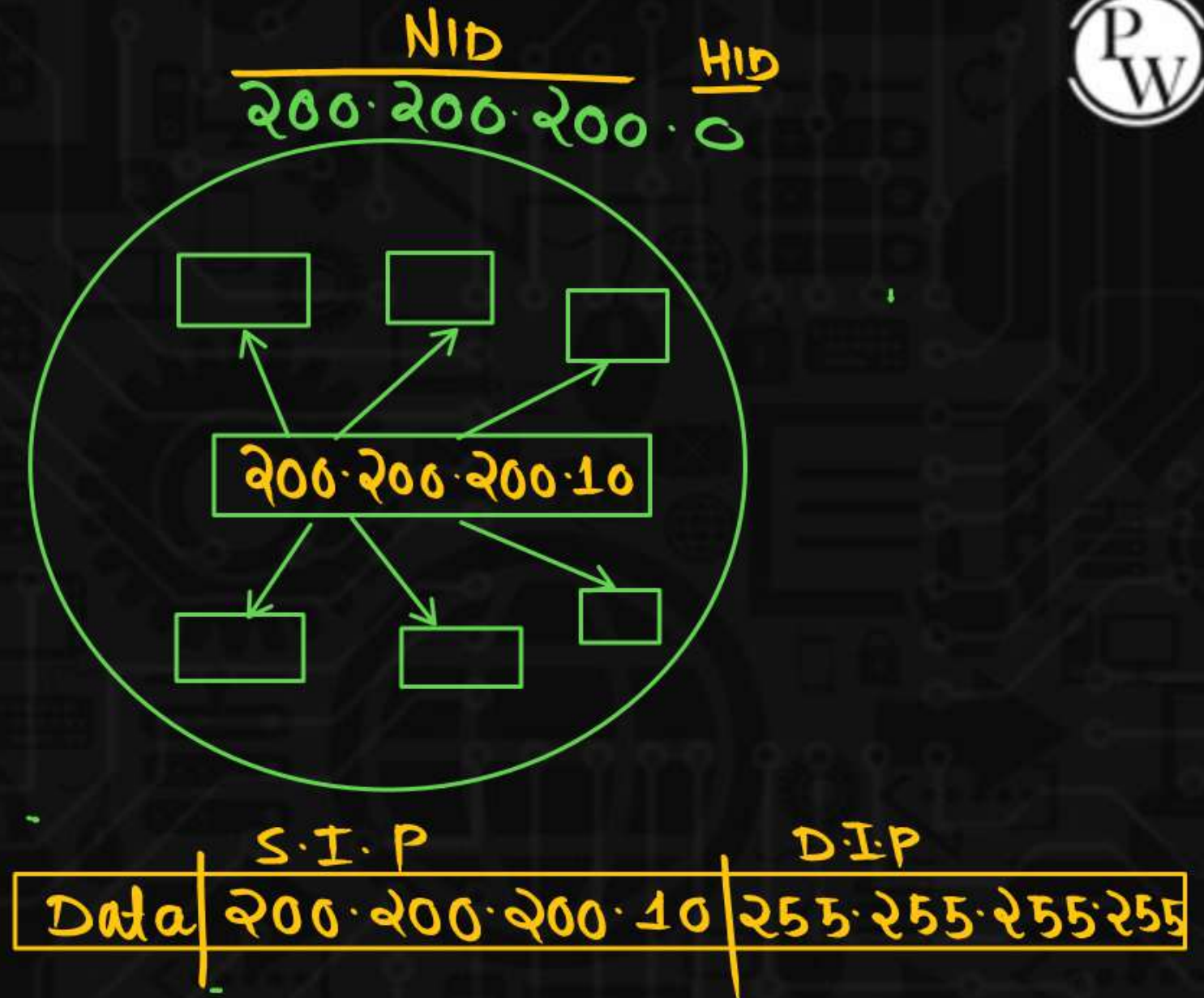
## Note:

- ① Limited Broadcast Address Can not be used as a source IP Address
- ② Limited Broadcast Address will always be used as a Destination IP Address.

2.



3.

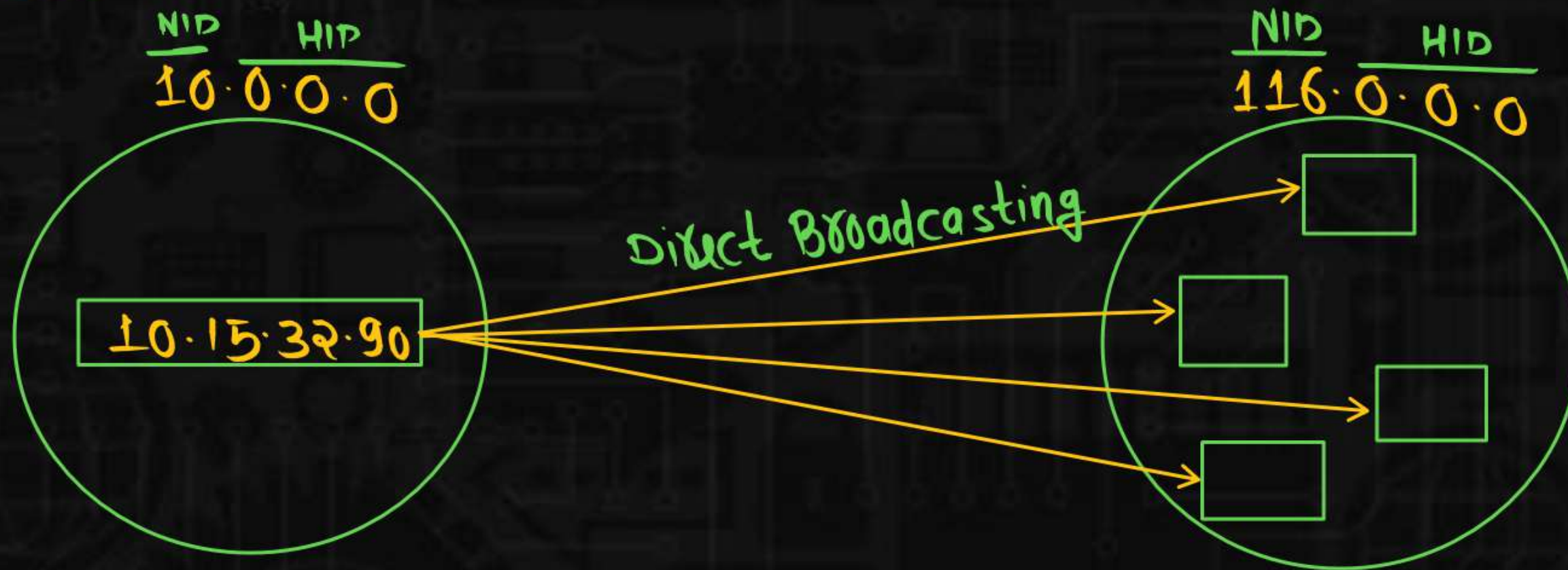


	S.I.P	D.I.P
Data	157.157.12.5	255.255.255.255



## Direct Broadcasting:

Transmitting data from one computer to all other computer in the different network is called as Direct Broadcasting.





	S.I.P	D.I.P	
①	Data 10.15.32.90	116.255.255.255	✓

	S.I.P	D.I.P	
②	Data 116.255.255.255 X	10.15.32.90	X

### Note:

- ① Direct Broadcast Addresses can not be used as a source IP Address
- ② Direct Broadcast Addresses will always be used as Destination IP Address.

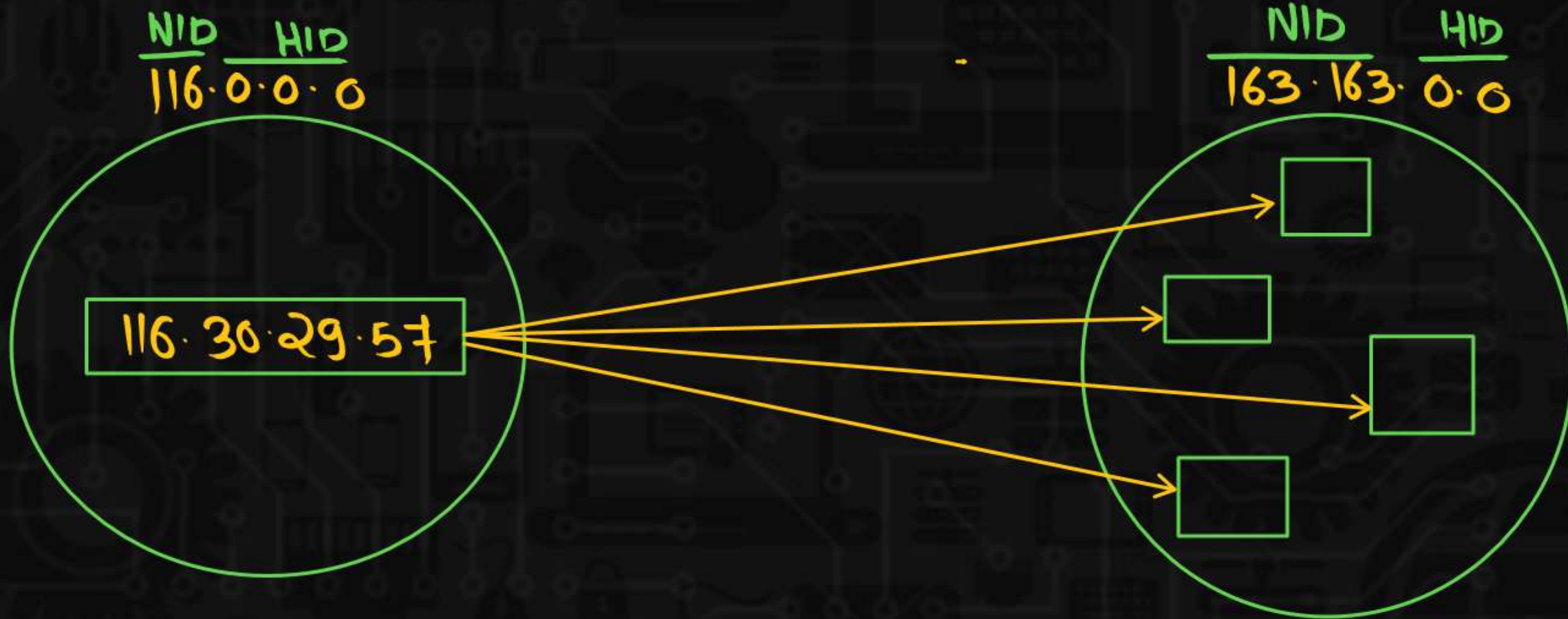


## NOTE:



When ever we have all 1's in HID part of any IP address , that IP address represent the Direct broadcast address so this is the reason we can't assign this IP address to any host. (Computer)

2.



	S.I.P	D.I.P
Data	116.30.29.54	163.163.255.255



3



NID    HID  
173.15.0.0



NID    HID  
200.10.15.0



	S.I.P	D.I.P
Data	173.15.24.5	200.10.15.255

Note

	<u>NID</u>	<u>HID</u>	
①	Valid	0's	→ Network id of entire Network
②	Valid	1's	→ Direct Broadcast Addresses
③	1's	1's	→ Limited Broadcast Addresses



	IP Address	Network-Id	Direct Broadcast Address	Limited Broadcast Address
Class-A	<u>19.35.21.31</u> N HID	19.0.0.0	19.255.255.255	255.255.255.255
Class-A	<u>119.31.34.2</u> NID HID	119.0.0.0	119.255.255.255	255.255.255.255
Class-B	<u>150.0.94.31</u> NID HID	150.0.0.0	150.0.255.255	)
Class-B	<u>190.34.17.31</u> NID HID	190.34.0.0	190.34.255.255	)
Class-C	<u>200.200.34.92</u> NID HID	200.200.34.0	200.200.34.255	)
Class-C	<u>217.39.47.9</u> NID HID	217.39.47.0	217.39.47.255	)
Class-D	226.9.7.97	X	X	X
Class-E	243.2.3.5	X	X	X



## Network Masks:

A network mask helps you to know which portion of the address identifies the network-id and which portion of the address identifies the host-id. Class A, B, and C networks have default masks, also known as natural masks, as shown here:

**Class A:** 255.0.0.0  
                  NID      HID

**Class B:** 255.255.0.0  
                  NID      HID

**Class C:** 255.255.255.0  
                  NID      HID



- In the Network Mask No. of 1's indicate Network-id Part and No. of 0's indicate Host-id Part

Class-A : 11111111.00000000.00000000.00000000  
255.0.0.0

Class-B : 11111111.11111111.00000000.00000000  
255.255.0.0

Class-C : 11111111.11111111.11111111.00000000  
255.255.255.0



IP Add = 200.200.200.96

Network Mask = 255.255.255.0

IP Address: 11001000.11001000.11001000.01100000

Network mask: 11111111.11111111.11111111.00000000  
NID HID

NID

# HID

$$NID = 200 \cdot 200 \cdot 200$$

HID = 96



IP Address = 11001000. 11001000. 11001000. 01100000  
ANDing AND

Network mask = 11111111. 11111111. 11111111. 00000000

NID = 11001000. 11001000. 11001000. 00000000

NID = 200. 200. 200. 0

Shortcut

IP Add: 200. 200. 200 . 96  
NID HID

NID = 200. 200. 200. 0

Any 8 bit Number  
AND

255

Any 8 bit Number





Identify the type of the IP address  $\overset{\text{NID}}{\text{192.192.192.}}\overset{\text{HID}}{255}$   
(Assuming Classful addressing scheme is followed.)

↓  
class-c [ 192-223 ]

- ☒ A. Directed broadcast address
- ☐ B. Limited broadcast address
- ☐ C. Host IP address
- ☐ D. Network address





Match the following:

	List-I		List-II
(a)	200.10.192.100	(i)	Class A
(b)	7.10.230.1	(ii)	Limited Broadcast Address
(c)	128.1.1.254	(iii)	Directed Broadcast Address
(d)	255.255.255.255	(iv)	Class C
(e)	100.255.255.255	(v)	Class B

Codes:

NID

HID

- A. a-ii, b-iii, c-iv, d-v, e-i
- ☒ B. a-iv, b-i, c-v, d-ii, e-iii
- C. a-iii, b-i, c-v, d-ii, e-iv
- D. a-iv, b-ii, c-v, d-i, e-iii





What is the network ID (NID) of the IP address 230.100.123.70? (Assuming Classful addressing scheme is followed.)

→ class-D (224 - 239)

No Network-id and No Host-id in class-D

- A. 230.100.123.0
- B. 230.100.0.0
- C. 230.0.0.0
- ☒ D. None of these





Which can be valid class-c network ID?

MSQ

class-c [192-223]

- ☒ A.  $\frac{200.200.200.200}{\text{NID} \quad \text{HID}}$
- ☒ B.  $\frac{200.200.200.0}{\text{NID} \quad \text{HID}}$
- ☒ C.  $\frac{200.0.0.0}{\text{NID} \quad \text{HID}}$
- ☒ D.  $\frac{194.194.194.0}{\text{NID} \quad \text{HID}}$

(B, C, D)



class-A

class-B

class-C



100.86.95.75, 157.192.190.253, 200.1.56.97,  
10.34.87.95. Which of the following is common for all  
these IP Addresses.

class-A

- ☒ A. Class of IP address
- ☒ B. Limited broadcast address
- ☒ C. Network address
- ☒ D. Direct broadcast address





For the IP Addresses 132.54.78.98 identify the Class ,and  
Limited broadcast Address

H.W

- A. IP address belong to class A, Limited broadcast address = 255.255.255.255
- B. IP address belong to class B, Limited broadcast address = 130.255.255.255
- C. IP address belong to class B, Limited broadcast address = 255.255.255.255
- D. IP address belong to class A, Limited broadcast address = 130.54.255.255



One host having IP address 200.187.96.0, sends a message to a host with IP address 205.54.83.97, what will be the destination address attached to message by source?

H.W

- A. 205.54.83.97
- B. 205.54.83.255
- C. 205.54.83.0
- D. Not possible





Which of the following can be used as a source IP as well as destination IP ?

H.W

- A. 23.0.0.97
- B. 255.255.255.255
- C. 157.54.255.255
- D. 15.255.255.255



Which of the following IP address can be given to a computer as a host?



H.W

- A. 32.0.0.0
- B. 255.255.255.255
- C. 157.54.255.254
- D. 172.15.0.0



