CS & IT ENGINEERING

COMPUTER NETWORKS

IPv4 Addressing

Lecture No-06

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- Types of Communication

ABOUT ME

- Teaching Experience: 10+ Years
- Achievements:
  - AIR 159 in GATE & AIR 119 in NET JRF
  - Qualified ISRO, NIELIT & UPPCL
- Area of Expertise: Computer Networks

TYPES OF COMMUNICATION

(i) Unicast Communication (1 : 1)

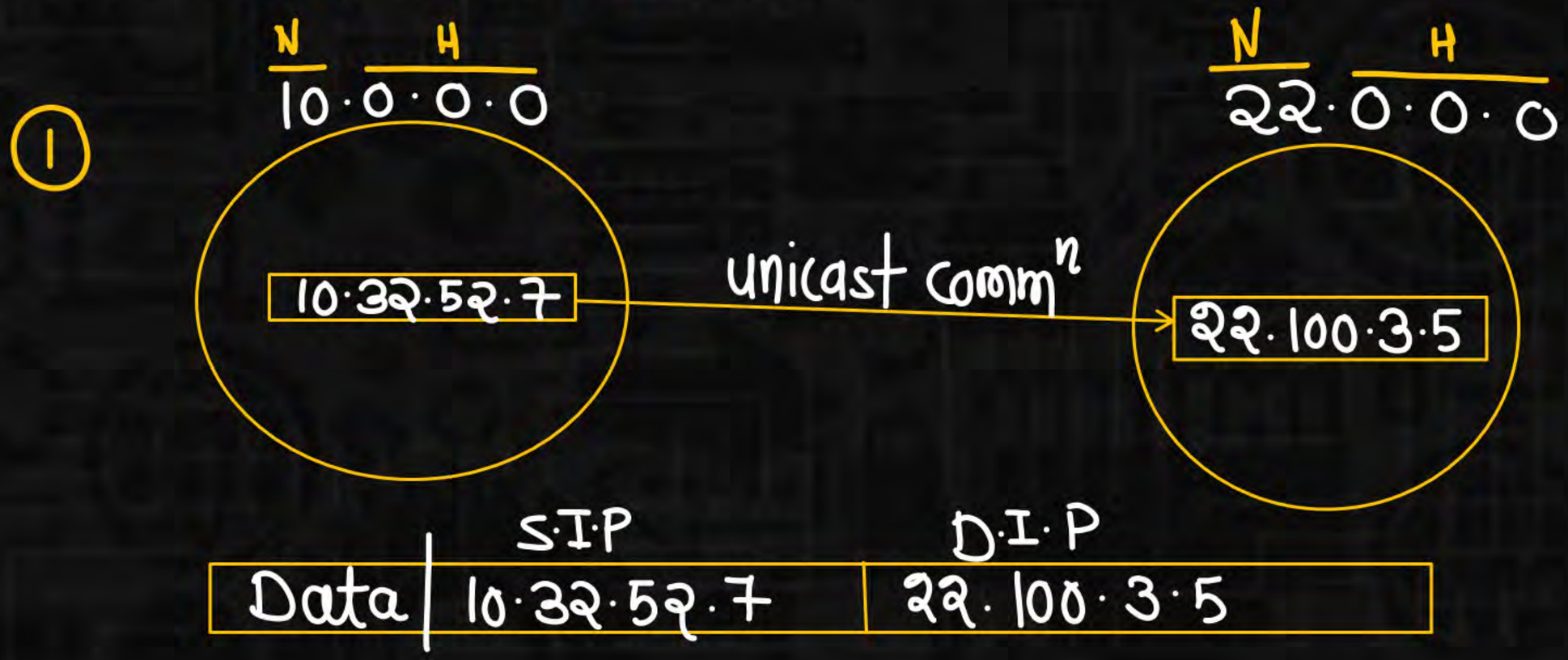
(ii) Broadcast Communication (1 : All)

(iii) Multicast Communication (1 : Many)

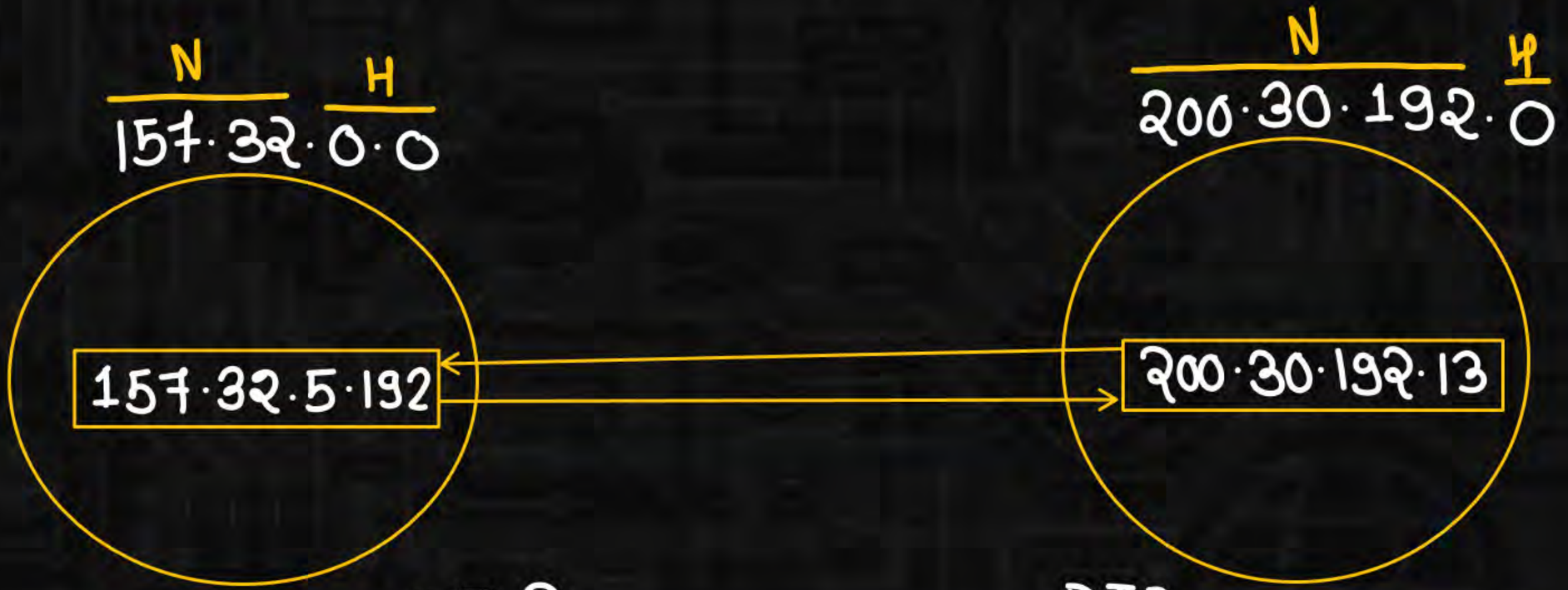
Unicast Communication:

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

It is one to one transmission.



(2)



i)

Data	S.I.P	DIP
Data	157·32·5·192	200·30·192·13

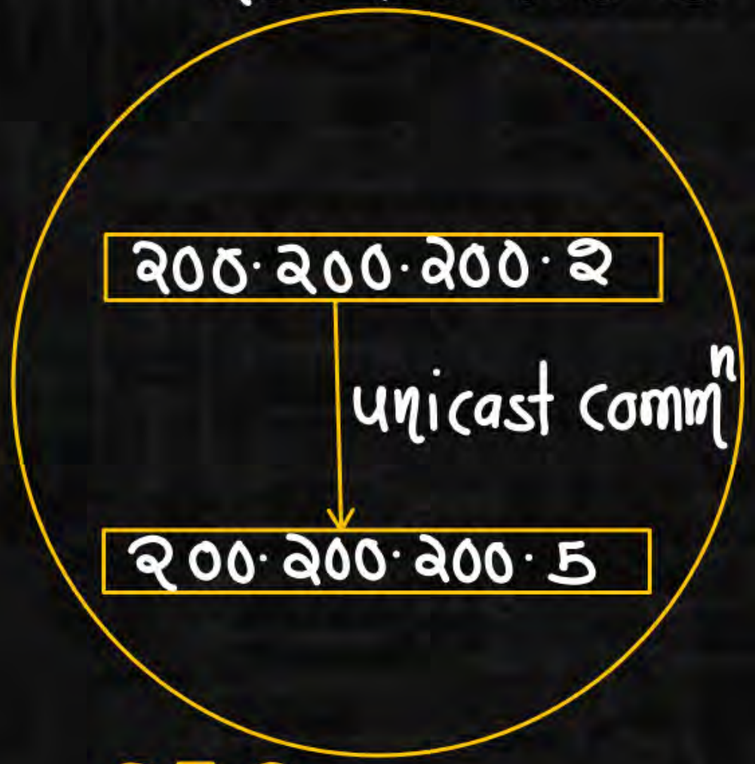
ii)

Data	S.I.P	DIP
Data	200·30·192·13	157·32·5·192

③

N HID

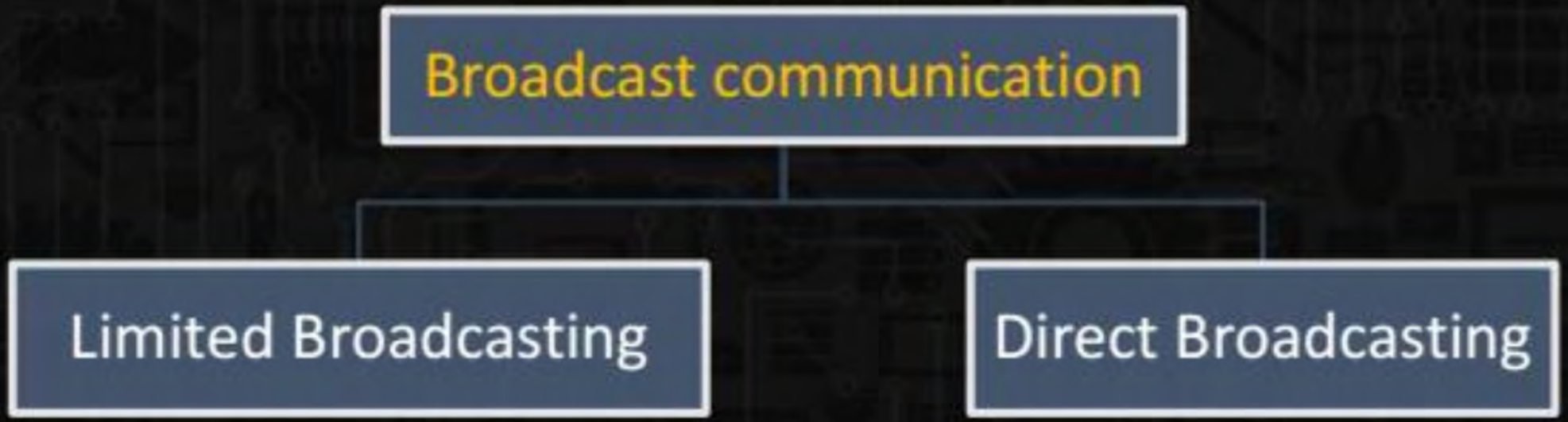
200.200.200.0



Note

In unicast comm^n Both soura and destination can be Present in the same Network or different Network.

Data	S.I.P 200.200.200.2	D.I.P 200.200.200.5

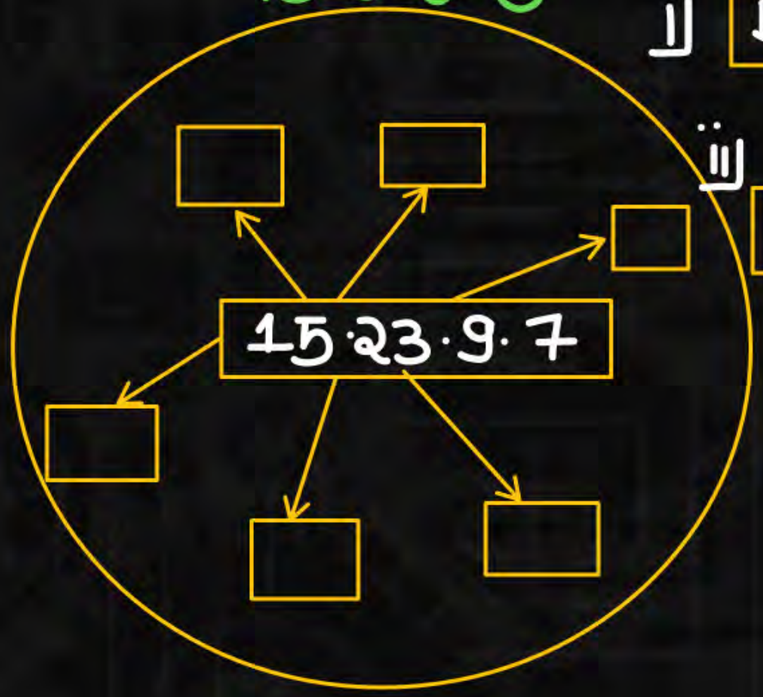

Broadcast communication
Limited Broadcasting
Direct Broadcasting

Limited Broadcasting:

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

N H
15·0·0·0

1]



ii] | Data | S·I·P: 15·23·9·7 | D·I·P: 255·255·255·255 | ✓

iii] | Data | S·IP: 255·255·255·255 | D·I·P: 15·23·9·7 | X

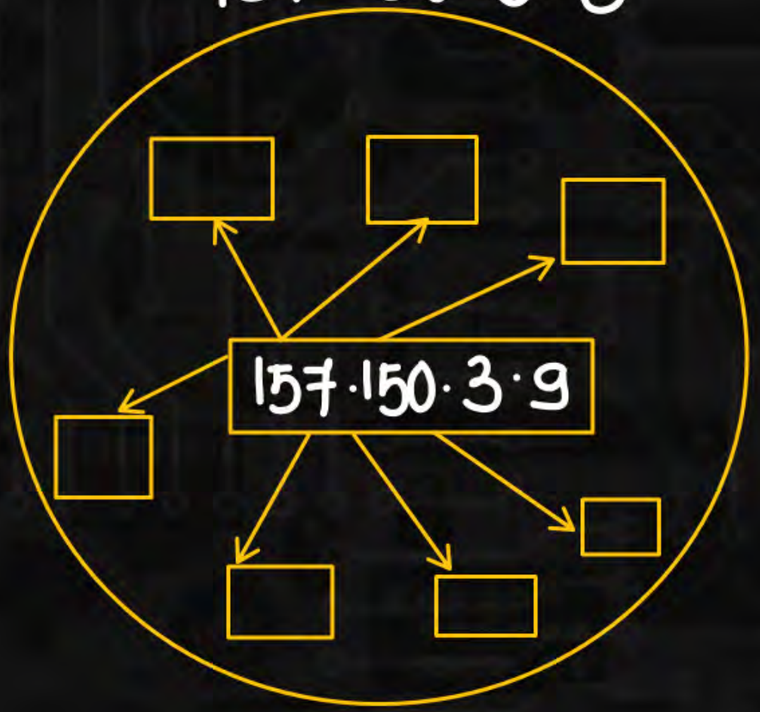
x

① Limited Broadcast Address can't be used as a Source IP Address (S.I.P)

② Limited Broadcast Address will always be used as a Destination IP Address.

2.

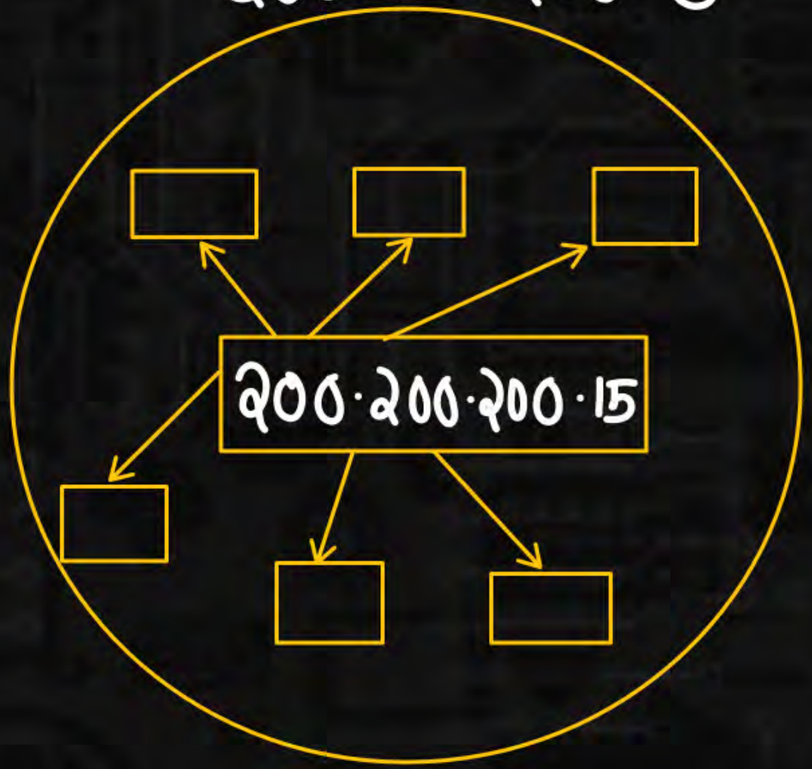
N	HID
157.150.0.0	



	S.I.P	D.I.P
Data	157.150.3.9	255.255.255.255

3.

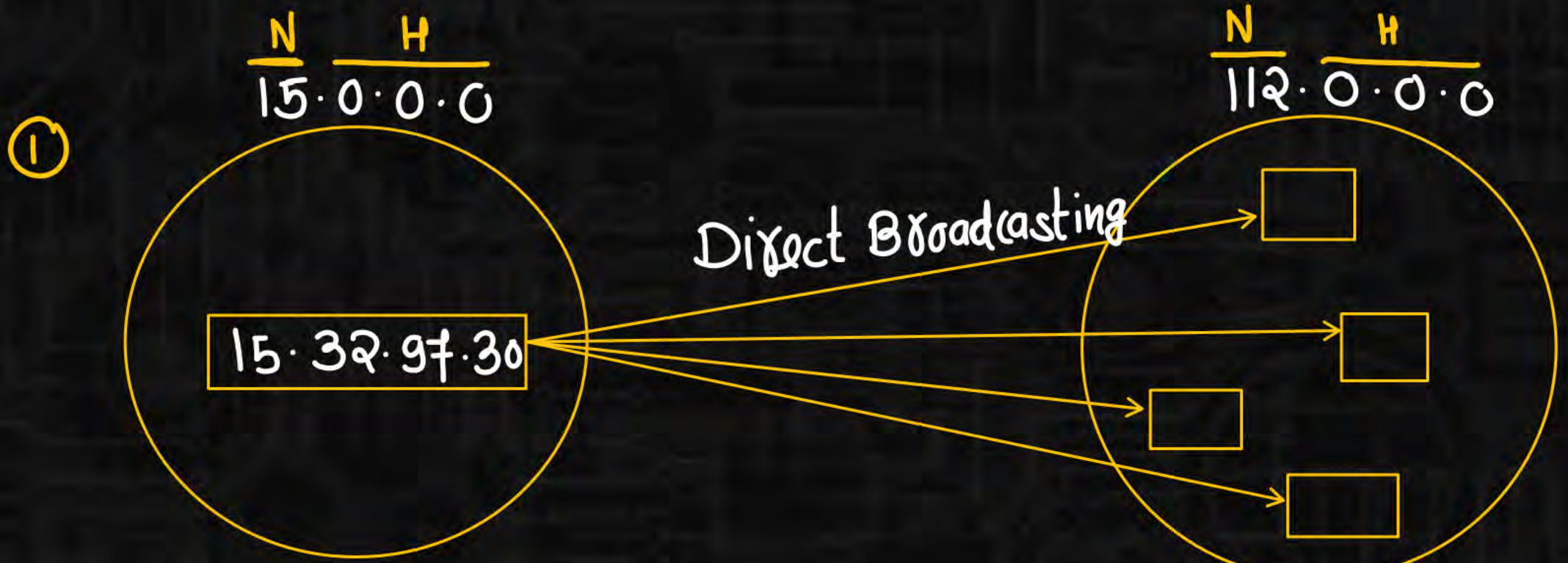
N / 200.200.200.0 / 4



	S.I.P	D.I.P
Data	200.200.200.15	255.255.255.255

Direct Broadcasting:

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



(1)

i) | Data | S.I.P: 15.32.97.30 | D.I.P: 112.255.255.255 | ✓

ii) | Data | S.I.P: 112.255.255.255 | D.I.P: 15.32.97.30 | X

X

Note

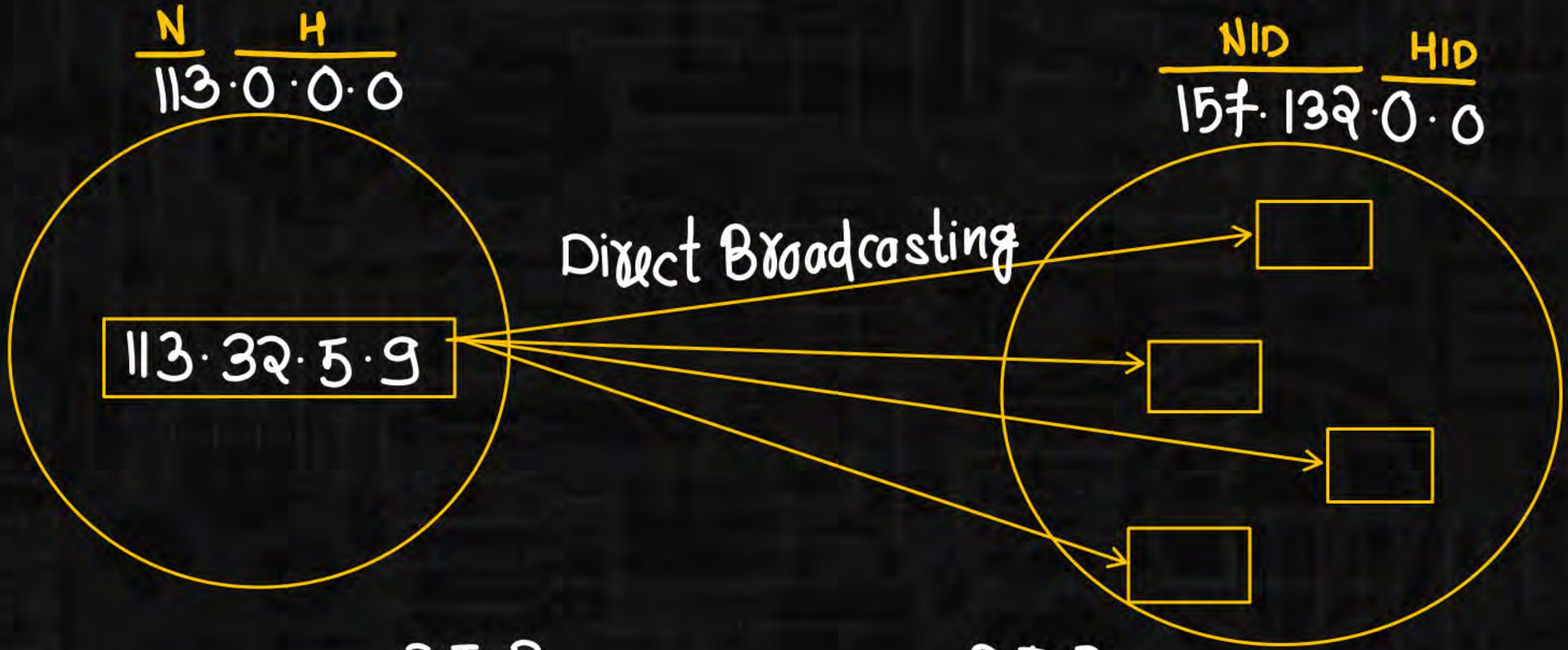
① Direct Broadcast Address can't be used as a source IP IP Address (S.I.P)

② Direct Broadcast Address will Always be used as a Destination IP Address (D.I.P)

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.



Data	S.I.P	D.I.P
	113.32.5.9	157.132.255.255

3.

Data	S·I·P	D·I·P
	150·130·2·130	200·30·90·255

	NID	HID	
①	Valid	0's	→ Network-id of entire Network
②	Valid	1's	→ Direct Broadcast Address (DBA)
③	1's	1's	→ Limited Broadcast Address (LBA)

	IP Address	Network-Id	Direct Broadcast Address	Limited Broadcast Address
class-A	19.35.21.31 (N.H)	19.0.0.0	19.255.255.255	255.255.255.255
class-A	119.31.34.2 (N.H)	119.0.0.0	119.255.255.255	"
class-B	150.0.94.31 (NID.HID)	150.0.0.0	150.0.255.255	"
class-B	190.34.17.31 (NID.HID)	190.34.0.0	190.34.255.255	"
class-C	200.200.34.92 (NID.HID)	200.200.34.0	200.200.34.255	"
class-C	217.39.47.9 (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

Class B: 255.255.0.0
NID

Class C: 255.255.255.0
NID

Note

On the Network Mask No. of 1's indicate NID Part and No. of 0's indicate HID Part

i) classA: 11111111.00000000.00000000.00000000
255.0.0.0

ii) class.B: 11111111.11111111.00000000.00000000
255.255.0.0

iii) class-c: 11111111.11111111.11111111.00000000
255.255.255.0

IP Address: २००.२००.२००.९६

Network Mask: २५५.२५५.२५५.०

IP Add: 11001000.11001000.11001000.01100000

Ntl.mask: 11111111.11111111.11111111.00000000

NID HID

NID = २००.२००.२००

HID = ९६

IPAdd = 11001000 · 11001000 · 11001000 · 01100000

ANDing AND

Network Mask = 11111111 · 11111111 · 11111111 · 00000000

NID = 11001000 · 11001000 · 11001000 · 00000000

NID = 200 · 200 · 200 · 0

IPAdd : 200 · 200 · 200 · 96 (NID | HID)

NID = 200 · 200 · 200 · 0

Shortcut :

Any 8 bit Number
AND
255
Any 8 bit Number

Q. Identify the type of the IP address 192.192.192.255 (Assuming Classful addressing scheme is followed.)

NID HID

Class-C (192-223)

MCQ

A. Directed broadcast address ✓

B. Limited broadcast address ✗

C. Host IP address ✗

D. Network address ✗

Q. 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

NID HID

Codes:

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

MCQ

Q. 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 Host-id in class-D

A. 230.100.123.0

B. 230.100.0.0

C. 230.0.0.0

D. None of these ✓

Q. Which can be valid class-c network ID?

MSQ

A. NID / HID: 200.200.200.200

B. NID / HID: 200.200.200.0

C. NID / HID: 200.0.0.0

D. NID / HID: 194.194.194.0

class-c(192-223)

B, C, D

Q. 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.

A. Class of IP address

B. Limited broadcast address

C. Network address

D. Direct broadcast address

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

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

Q. 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?

A. 205.54.83.97

B. 205.54.83.255

C. 205.54.83.0

D. Not possible

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

A. 23.0.0.97

B. 255.255.255.255

C. 157.54.255.255

D. 15.255.255.255

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

A. 32.0.0.0

B. 255.255.255.255

C. 157.54.255.254

D. 172.15.0.0


THANK YOU GW
SOLDIERS !