IP Parameters

1. Netmask

The CIDR /26 means that the first 26 bits of the IP address are used for the network portion, and the remaining 6 bits are for the host portion.

In binary, the netmask is:

11111111.11111111.11111111.11000000

Converting this to decimal:

255.255.255.192

Netmask: 255.255.255.192

2. Network Address

The network address is calculated by performing a bitwise AND operation between the given IP address (192.168.0.0) and the netmask (255.255.255.192).

IP Address in binary: 11000000.10101000.00000000.00000000

Netmask in binary: 11111111.11111111.11111111.11000000

Bitwise AND result: 11000000.10101000.00000000.00000000

Converting the result back to decimal:

192.168.0.0

Network Address: 192.168.0.0

3. Broadcast Address

The broadcast address is calculated by setting all the host bits (the bits not covered by the netmask) to 1.

Netmask in binary: 11111111.11111111.11111111.11000000

Inverted Netmask: 00000000.00000000.00000000.00111111

Network Address: 11000000.10101000.00000000.00000000

Bitwise OR result: 11000000.10101000.00000000.00111111

Converting the result back to decimal:

192.168.0.63

Broadcast Address: 192.168.0.63

4. Number of Hosts

The number of usable hosts in a subnet is calculated using the formula:

Number of Hosts = 2^(32 - subnet bits) - 2

Here, 32 - 26 = 6 (6 host bits).

Total hosts: 2^6 = 64

Usable hosts: 64 - 2 = 62 (subtracting 2 for the network and broadcast addresses).

Number of Hosts: 62