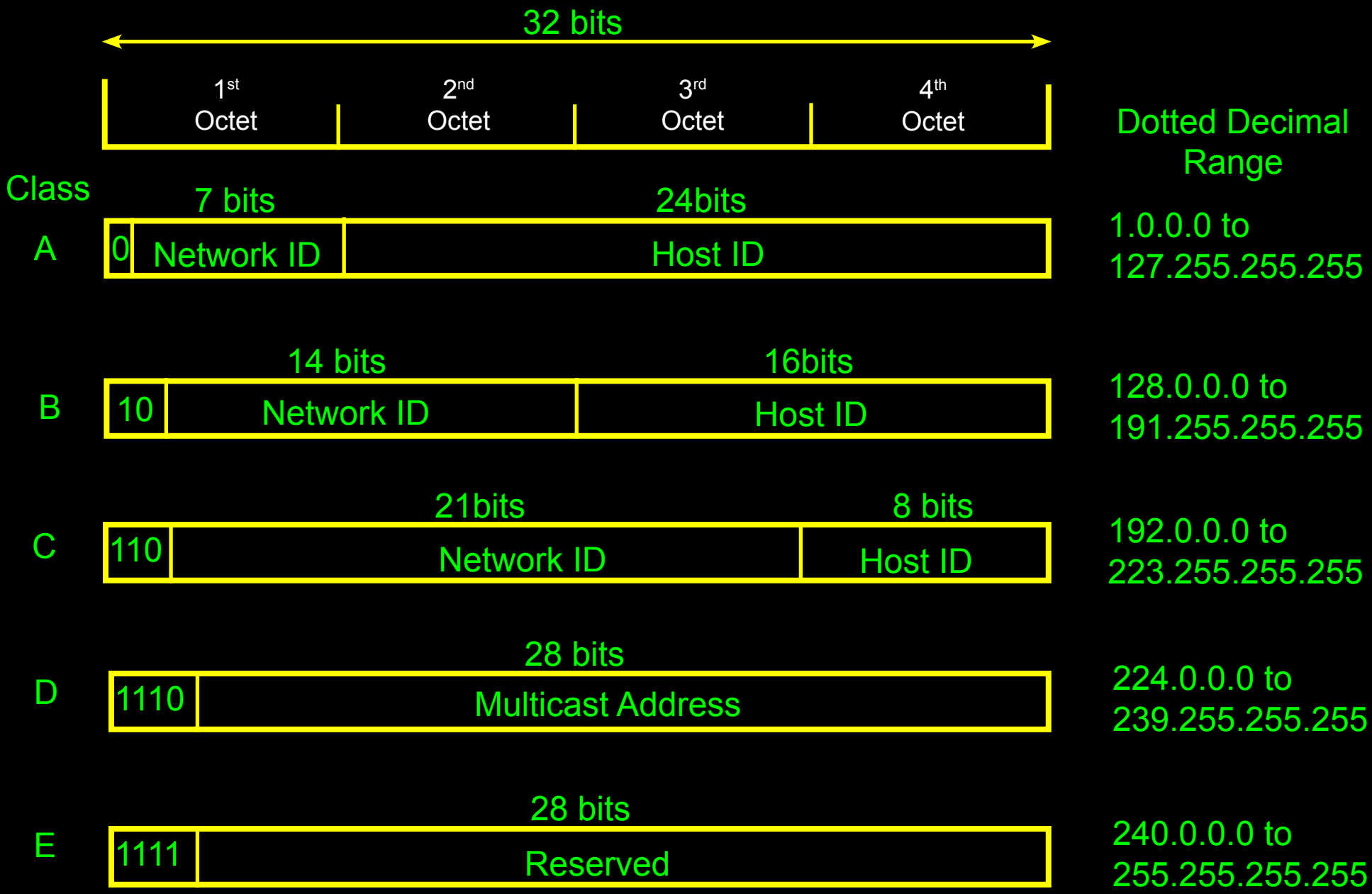
Classful and Special IPv4 Addressing



Router Protocols
RIP, OSPF, BGP
and IMCP

1. RIP, OSPF, and BGP are application layer protocols

2. ICMP is a transport layer protocol

1. Routing protocols are integral to layer 3, the network layer. Why then are routing protocols a layer 5, application layer, protocol?

2. ICMP is integral to layer 3, the network layer. Why then is ICMP a layer 4, transport layer, protocol?

IP Addresses Reserved for Private Networks

Prefix	Mask	Lowest Address	Highest Address
10.0.0.0/8	255.0.0.0	10.0.0.0	10.255.255.255
172.16.0.0/12	255.240.0.0	172.16.0.0	172.31.255.255
192.168.0.0/16	255.255.0.0	192.168.0.0	192.168.255.255
169.254.0.0/16	255.255.0.0	169.254.0.0	169.254.255.255

The prefixes reserved for use with private networks not connected to the global Internet. If a datagram sent to one of these addresses accidently reaches the Internet, an error will result.

Summary of Special IP Address Conventions

IP Addresses Reserved for Private Networks

Prefix	Mask	Lowest Address	Highest Address
10.0.0.0/8	255.0.0.0	10.0.0.0	10.255.255.255
172.16.0.0/12	255.240.0.0	172.16.0.0	172.31.255.255
192.168.0.0/16	255.255.0.0	192.168.0.0	192.168.255.255
169.254.0.0/16	255.255.0.0	169.254.0.0	169.254.255.255

The prefixes reserved for use with private networks not connected to the global Internet. If a datagram sent to one of these addresses accidently reaches the Internet, an error will result.

How Subnet Masks Work (same subnet)

	Dotted Decimal
Source Host IP	192.168.101.217
Subnet /Notation	192.168.101/24
Subnet Mask Notation	255.255.255.0
Destination Host IP	192.168.101.210

	Binary
Source Host IP	11000000.10101000.01100101.11011001
Subnet Mask	11111111.11111111.11111111.00000000
Destination Host IP	11000000.10101000.01100101.11010010
Source & Mask	11000000.10101000.01100101.00000000
Dest. & Mask	11000000.10101000.01100101.00000000

How Subnet Masks Work (different subnet)

	Dotted Decimal
Source Host IP	192.168.101.217
Subnet /Notation	192.168.101/24
Subnet Mask Notation	255.255.255.0
Destination Host IP	192.168.110.217

	Binary
Source Host IP	11000000.10101000.01100101.11011001
Subnet Mask	11111111.11111111.11111111.00000000
Destination Host IP	11000000.10101000.01101110.11010010
Source & Mask	11000000.10101000.01100101.00000000
Dest. & Mask	11000000.10101000.01101110.00000000