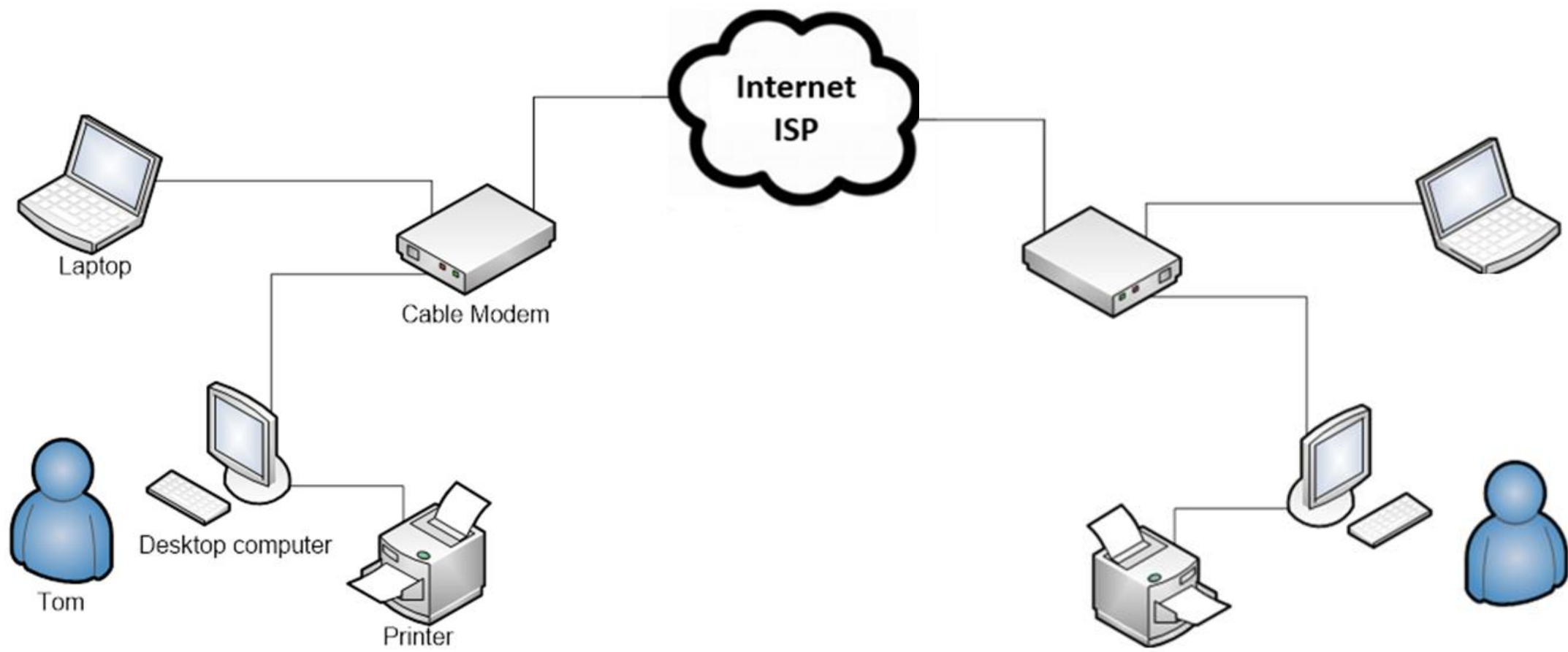
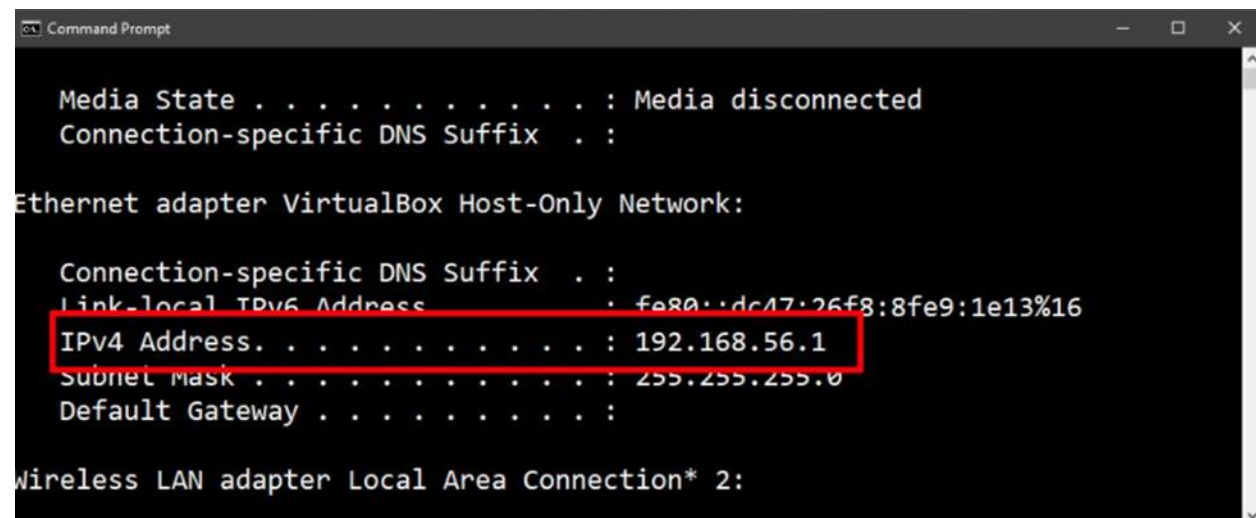
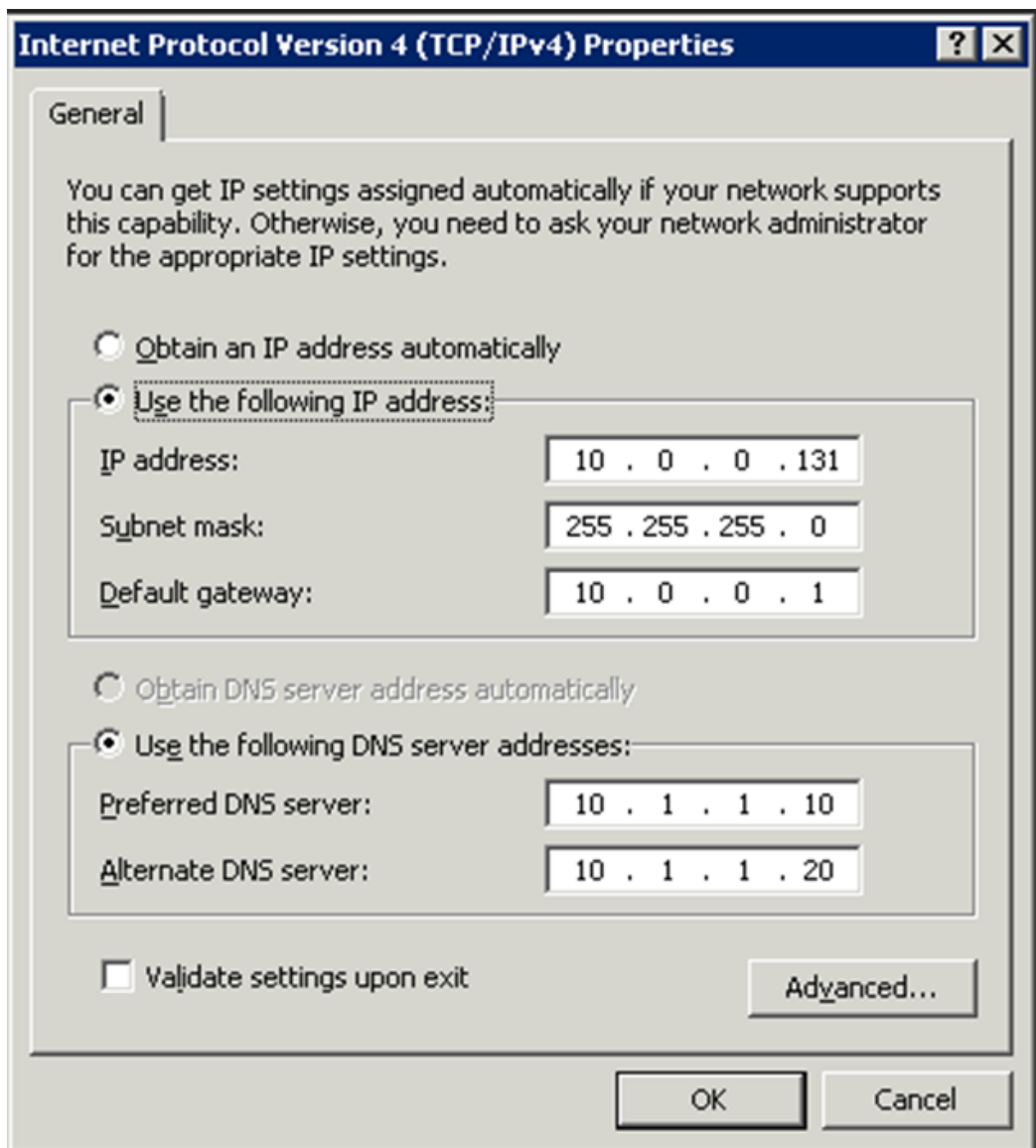


Introduction to Data Communication

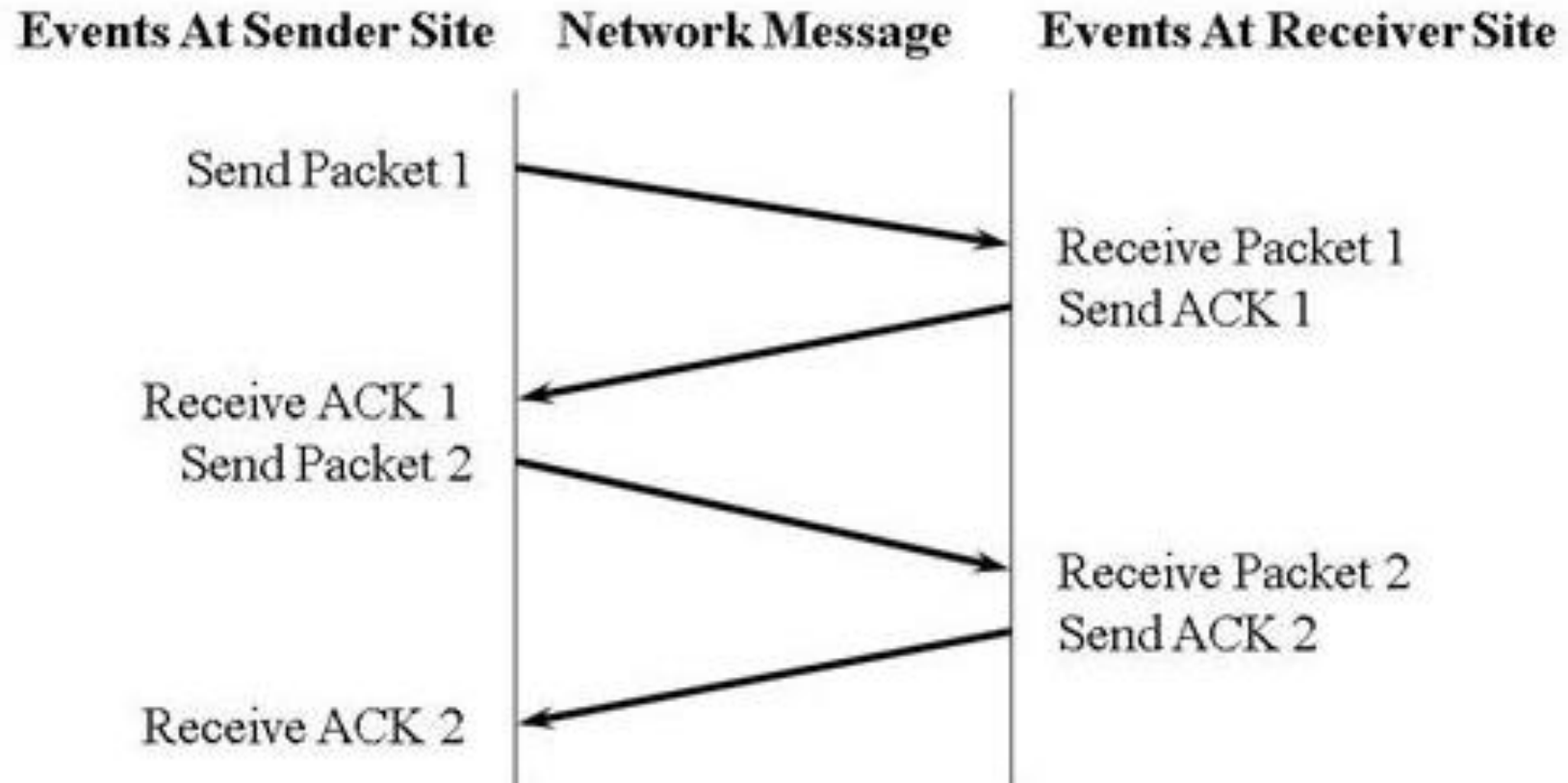


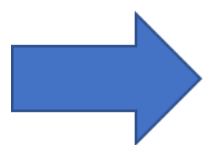
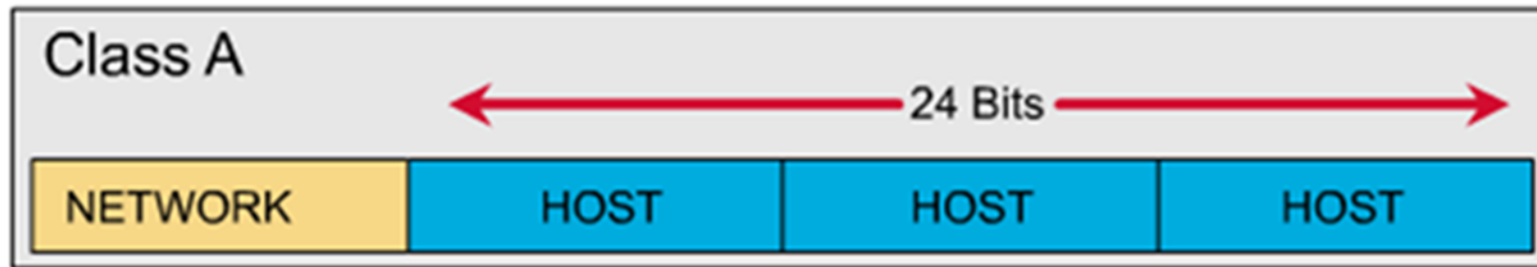
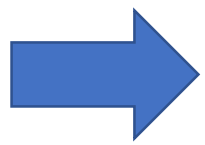




Positive ACK with Retransmission

Sender awaits an acknowledgement for each packet sent







<i>Class</i>	<i>IP address range (1st Octet)</i>	<i>Network Mask</i>	<i>Prefix</i>	<i>Number of Networks</i>	<i>Number of Hosts</i>
A	1. - 127.	255.0.0.0	/8	125	16,777,214
B	128. - 191.	255.255.0.0	/16	16,382	65,534
C	192. - 223.	255.255.255.0	/24	2,097,150	254
D	224. - 239.	Multicast addresses			
E	240. - 254.	Restricted/Experimental			

IPv4 Address Ranges

IP Address Class	First Octet Binary Value	First Octet Decimal Value	Possible Number of Hosts
Class A	1 - 126	00000001 to 01111110*	16,777,214
Class B	128 - 191	10000000 to 10111111	65,534
Class C	192 - 223	11000000 to 11011111	254

**127 (01111111) is a Class A address reserved for loopback and cannot be assigned to a network.*

Class	Private Address Range
A	10.0.0.0 to 10.255.255.255
B	172.16.0.0 to 172.31.255.255
C	192.168.0.0 to 192.168.255

IPv4

Deployed 1981

Address Size:

32-bit number

Address Format:

Dotted Decimal Notation:

192.149.252.76

Prefix Notation:

192.149.0.0/24

Number of Addresses:

$2^{32} = \sim 4,294,967,296$

IPv6

Deployed 1999

Address Size:

128-bit number

Address Format:

Hexadecimal Notation:

3FFE:F200:0234:AB00:0123:4567:8901:ABCD

Prefix Notation:

3FFE:F200:0234::/48

Number of Addresses:

**$2^{128} =$
 $\sim 340,282,366,920,938,463,463,374,$
 $607,431,768,211,456$**

- TCP/IP : Transmission Control Protocol/Internet Protocol. TCP/IP is a set of standardized rules that allow computers to communicate on a network such as the internet.
- DHCP : dynamic host configuration protocol (automatically assigns IP addresses)
- DNS : Domain Name System (phone book of the internet)
- ISP : Internet Service Provider
- URL : Uniform Resource Locator (web/ internet address)
- Command line troubleshooting (ipconfig /all, tracert)
- C:\Windows\System32\drivers\etc\hosts (to define local name resolution)
- <https://www.calculator.net/>