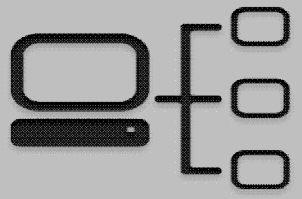
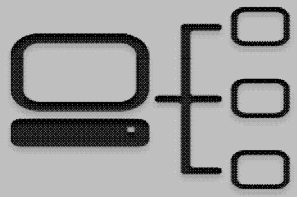
Understanding IPv4 Addresses

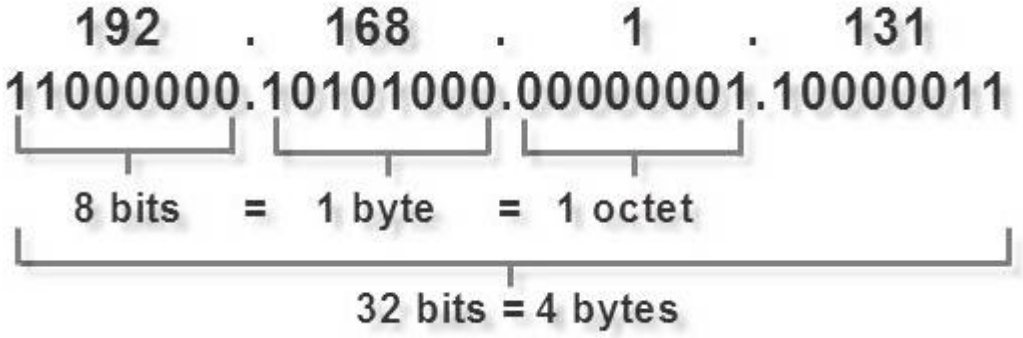


- An IP Address is a **logical** address used in order to **uniquely identify** a device on an IP network.
- It's a **Network Layer** Address
- There are Two Versions:
  - IP version 4 (IPv4)
  - IP version 6 (IPv6)
- This course focuses on IPv4 Addresses

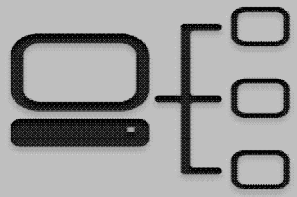
Understanding IPv4 Addresses

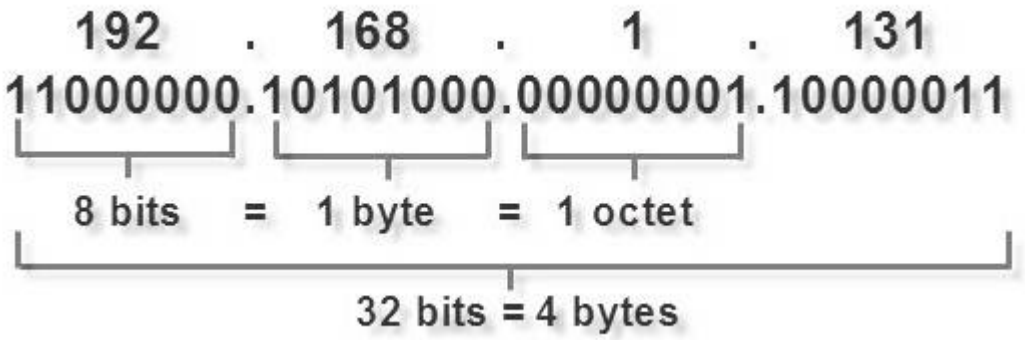


- Made up of 32 binary bits, which can be divided into a **network portion** and a **host portion** with the help of a **subnet mask**.
  - The 32 binary bits are broken into four octets (1 octet = 8 bits).
  - Each octet is converted to decimal and separated by a period (dot).
  - For this reason, an IP address is said to be expressed in dotted decimal format.



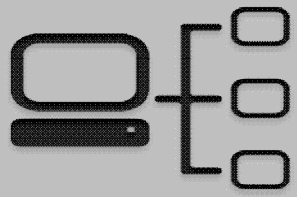
Understanding IPv4 Addresses





First Octet		Second Octet		Third Octet		Fourth Octet
192	.	168	.	1	.	10
11000000	.	10101000	.	00000001	.	00001010
8 bits		8 bits		8 bits		8 bits

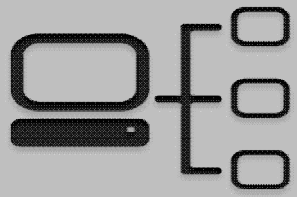
Understanding IPv4 Addresses



- An IP address is broken down into two parts:
  - **Network Address**
    - Uniquely identifies each network
      - Your Street Name: 7682 **Wilshire Drive**
  - **Host Address**
    - Uniquely identifies each machine on a network
      - Your House Address: **4682** Wilshire Drive

- **Network Address + Host Address = IP Address**
- **4682 + Wilshire Drive = 4682 Wilshire Drive**

Understanding IPv4 Addresses



- Each device on a network is assigned an IP address, subnet mask and default gateway:
  - **IP Address**: Unique logical address assigned to each device on a network.
  - **Subnet mask**: Used by the device to determine what subnet it's on.
  - **Default Gateway**: The router's IP address that allows the device to communicate outside it's local subnet.