

# Local Area Networking

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# What makes up a LAN

- IPv4 Addressing
- Defining a network w/ the subnet mask
- The MAC Address, broken down into parts
- How an IP address, subnet mask, and MAC address are used on a LAN
- IPv6 Address



# IPv4 Addressing

- Public addresses

0.0.0.0 - 255.255.255.255

- Private ranges

10.0.0.0 - 10.255.255.255

10.0.0.0/8 (16,777,216 addresses)

172.16.0.0 - 172.31.255.255

172.16.0.0/12 (1,048,576 addresses)

192.168.0.0 - 192.168.255.255

192.168.0.0/16 (65,536 addresses)

fc00::/7



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# Subnet Mask

IP address

172.16.0.100

Subnet Mask

255.255.255.0

Router

172.16.0.1



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# MAC Address

Media Access Control Address

01:23:45:67:89:ab



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# IPv6

- 2001:0DB8:AC10:FE01:0000:0000:0000:0000 or just 2001:0DB8:AC10:FE01:: (omitting the 0's)



# IPv6

- IPv6 addresses are written in eight groups of four hexadecimal digits separated by colons, such as 2001:0db8:85a3:0000:0000:8a2e:0370:7334. IPv6 unicast addresses other than those that start with binary 000 are logically divided into two parts: a 64-bit (sub-)network prefix, and a 64-bit interface identifier.



# How to Plan a Successful LAN, WAN, and In-between

- NAT
- Determining your private IP ranges & subnet masking
- How does a basic switch differ from a more complex one



# VLAN Fundamentals

- What is a VLAN?
- How does a VLAN differ from a LAN?
- Who should be using them?
- Equipment requirements