

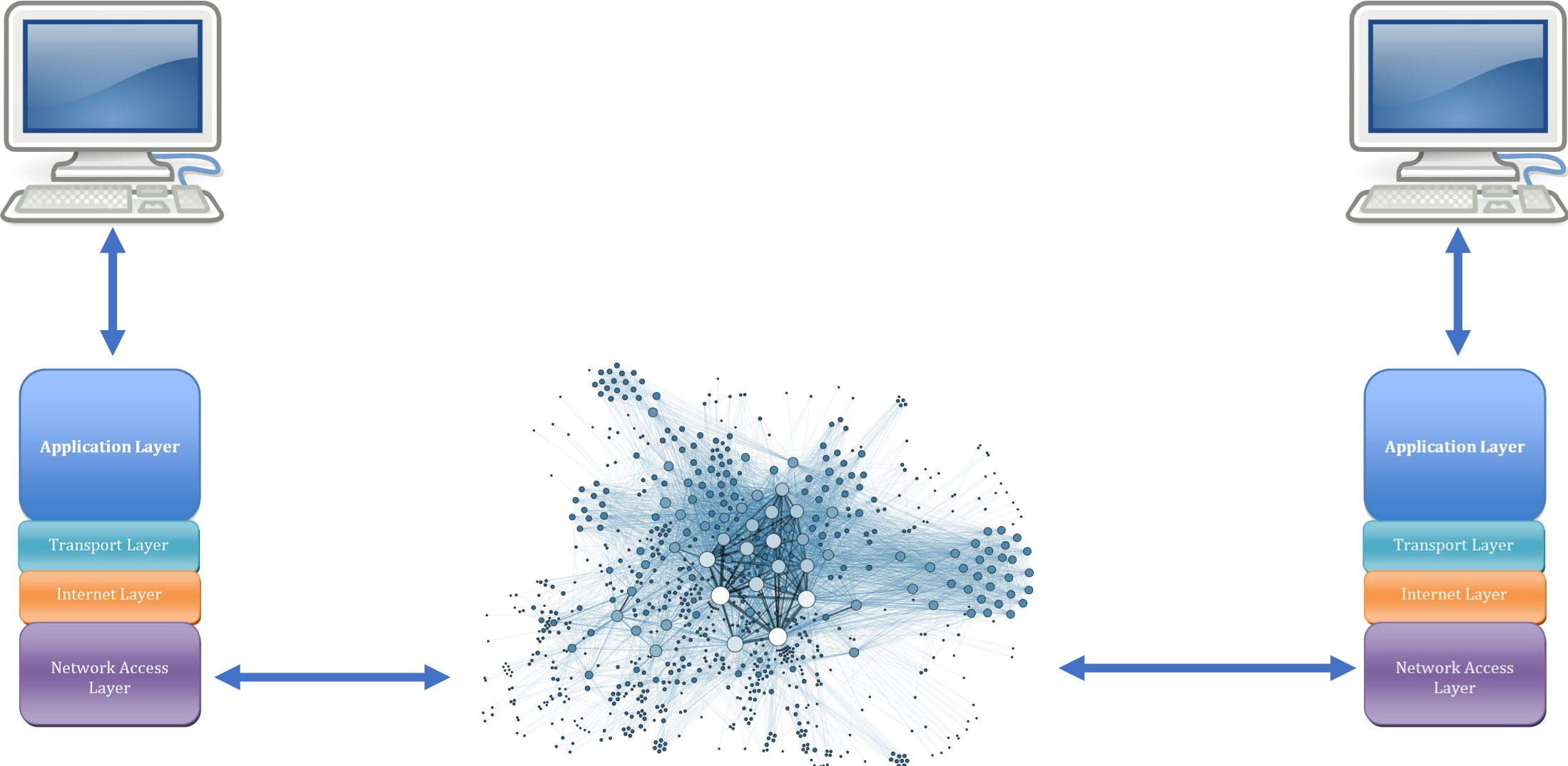
Introduction to TCP/IP

Introduction

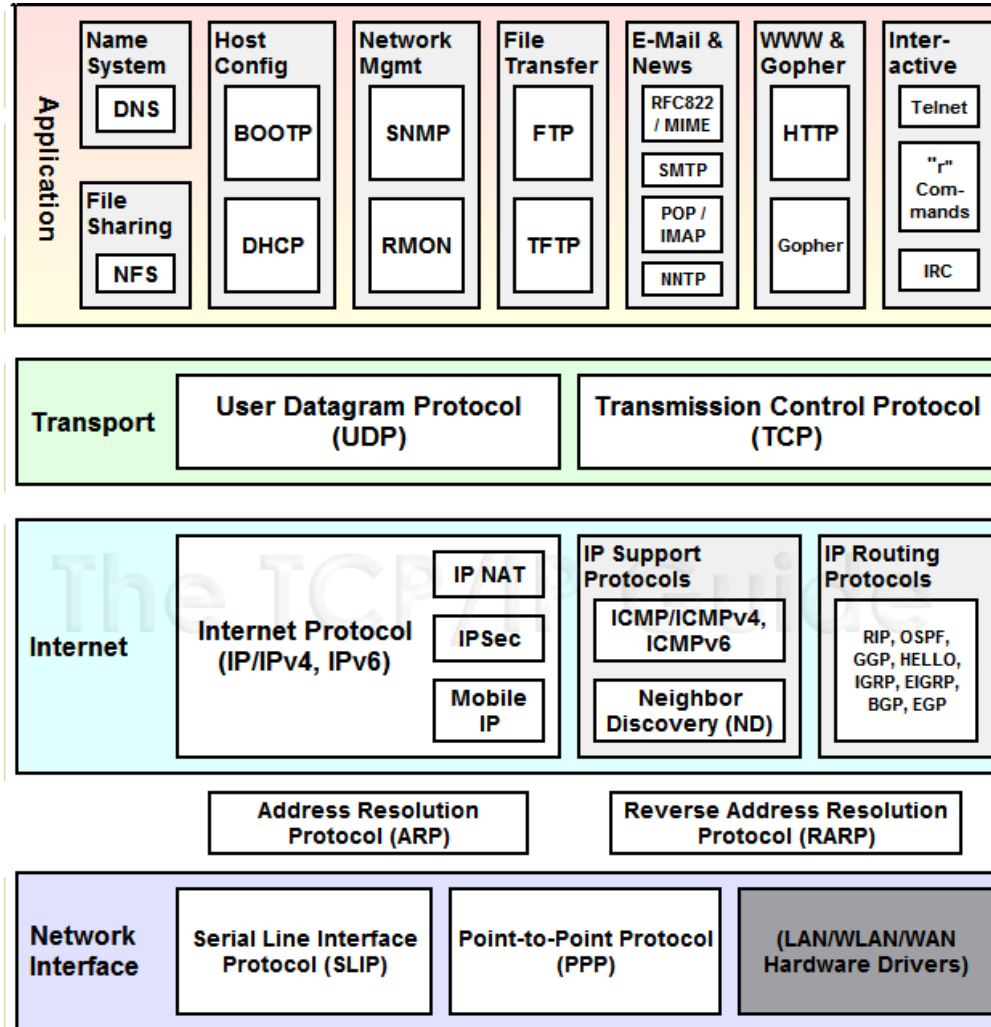
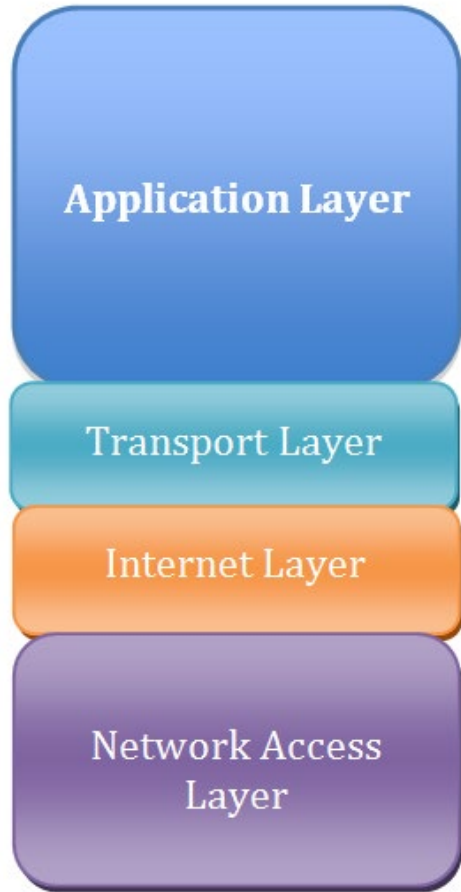


Data Network: A group of computers and other devices that communicate over a shared medium

TCP/IP Introduction



TCP/IP



TCP/IP model Protocols and services

Application	HTTP, FTP, Telnet, NTP, DHCP, PING
Transport	TCP, UDP
Network	IP, ARP, ICMP, IGMP
Network Interface	Ethernet

Network Access Layer

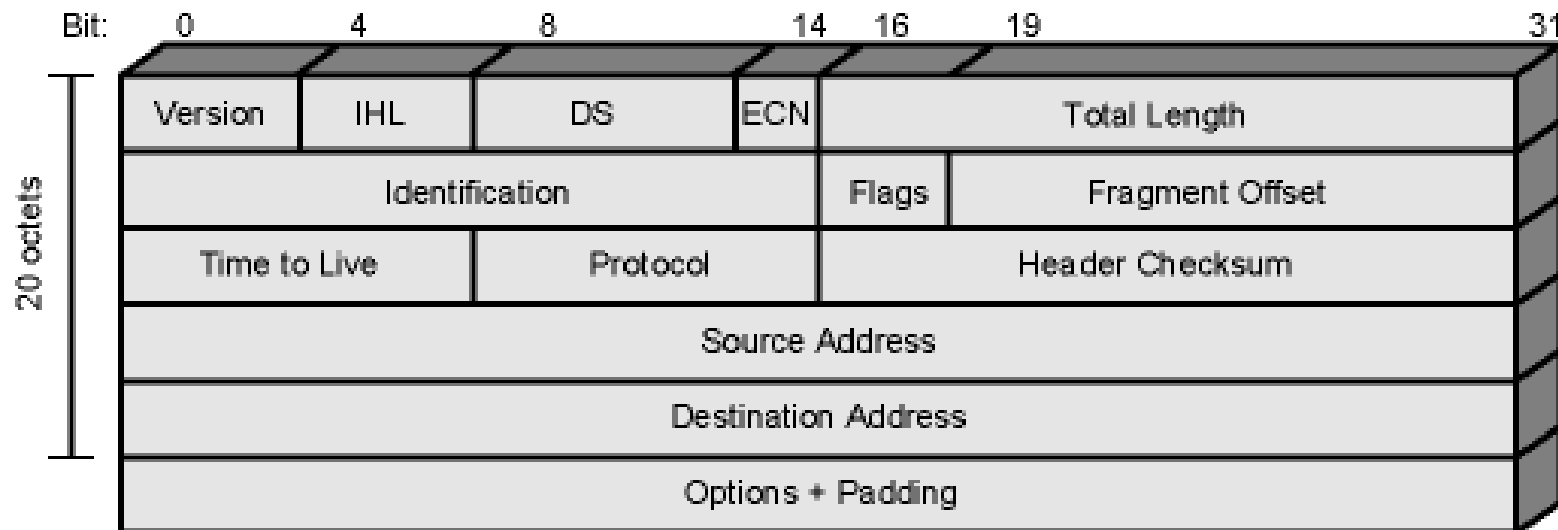
- Every device connected to internet has a unique ID
- Referred to as a MAC (Machine Access Code)
 - A well known example in Ethernet

Internet Layer

- Takes care of routing across multiple networks
- Each packet travels in network independently of each other
 - They may not arrive
 - They may arrive out of order
- Implemented in systems and routers as the Internet Protocol (IP)

IP (Internet Protocol)

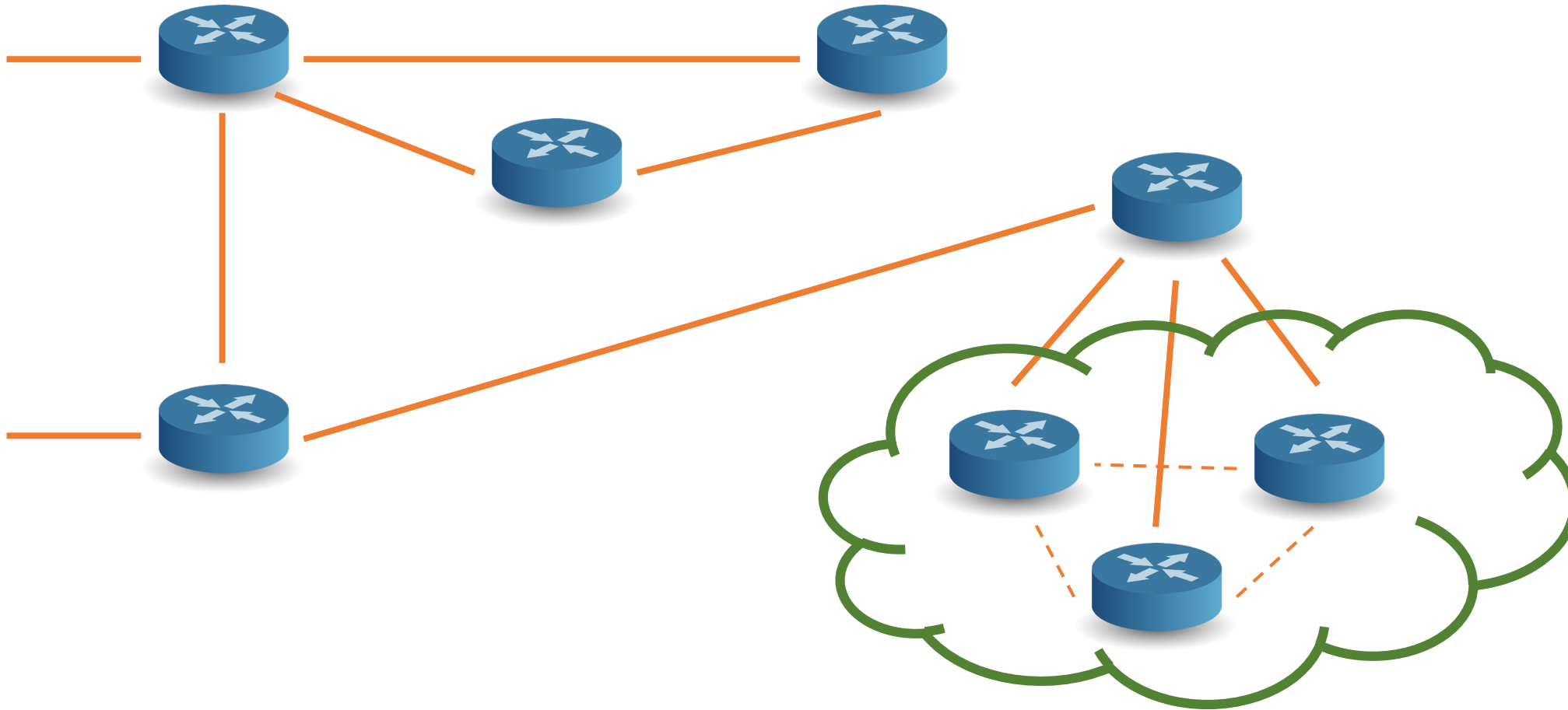
- The core of the TCP/IP Protocol
- Two versions co-exist
 - v4 – the widely used IP protocol
 - v6 – has been standardized in 1996, but still not widely deployed
- IP (v4) header minimum 20 octets (160 bits)



IP (Internet Protocol)

- Some TCP/IP protocols:
 - ICMP: Internet Control Message Protocol.
 - Handles errors and control information for IP (ping, traceroute).

Internet Architecture (Informal)



ICMP Type Numbers

Registration Procedure(s)

IESG Approval or Standards Action

Reference

[\[RFC2780\]](#)

Note

The Internet Control Message Protocol (ICMP) has many messages that are identified by a "type" field.

Available Formats



[CSV](#)

Type	Name	Reference
0	Echo Reply	[RFC792]
1	Unassigned	
2	Unassigned	
3	Destination Unreachable	[RFC792]
4	Source Quench (Deprecated)	[RFC792] [RFC6633]
5	Redirect	[RFC792]
6	Alternate Host Address (Deprecated)	[RFC6918]
7	Unassigned	
8	Echo	[RFC792]
9	Router Advertisement	[RFC1256]
10	Router Solicitation	[RFC1256]
11	Time Exceeded	[RFC792]
12	Parameter Problem	[RFC792]
13	Timestamp	[RFC792]
14	Timestamp Reply	[RFC792]