

# **CprE 530**

## Lecture 4

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## **Topics**

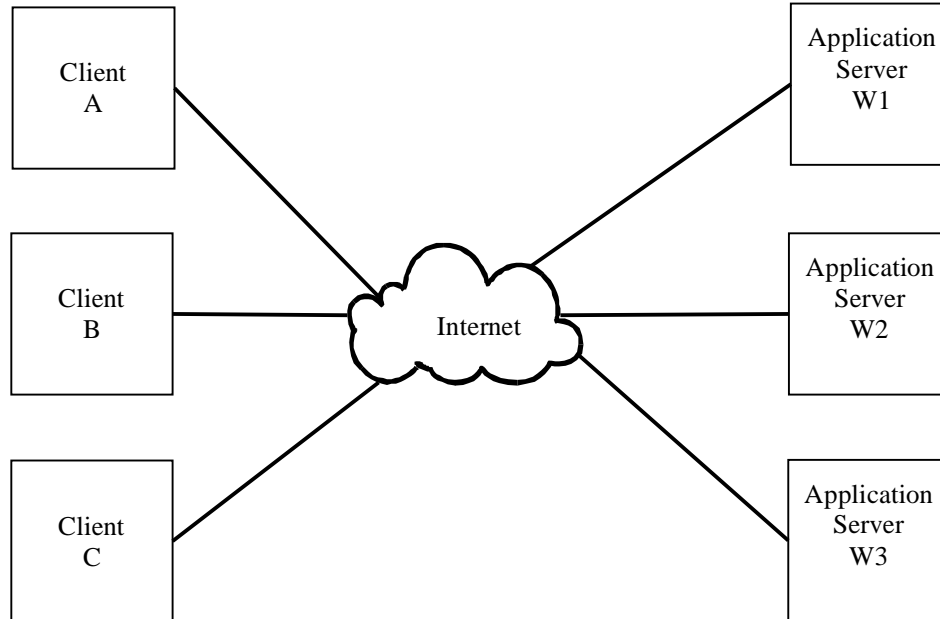
- Client Server
- Routing

# Client Server Model

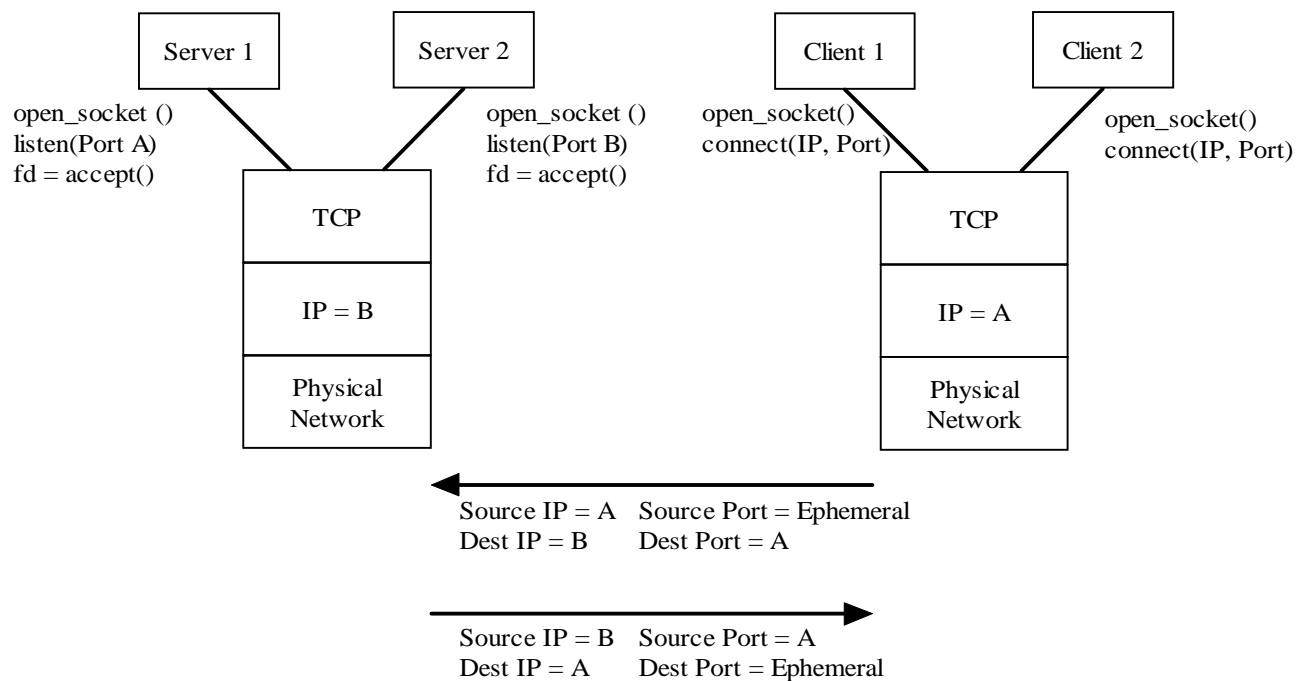
Full name: server.dougj.net

IP address:

Listening Port: 80



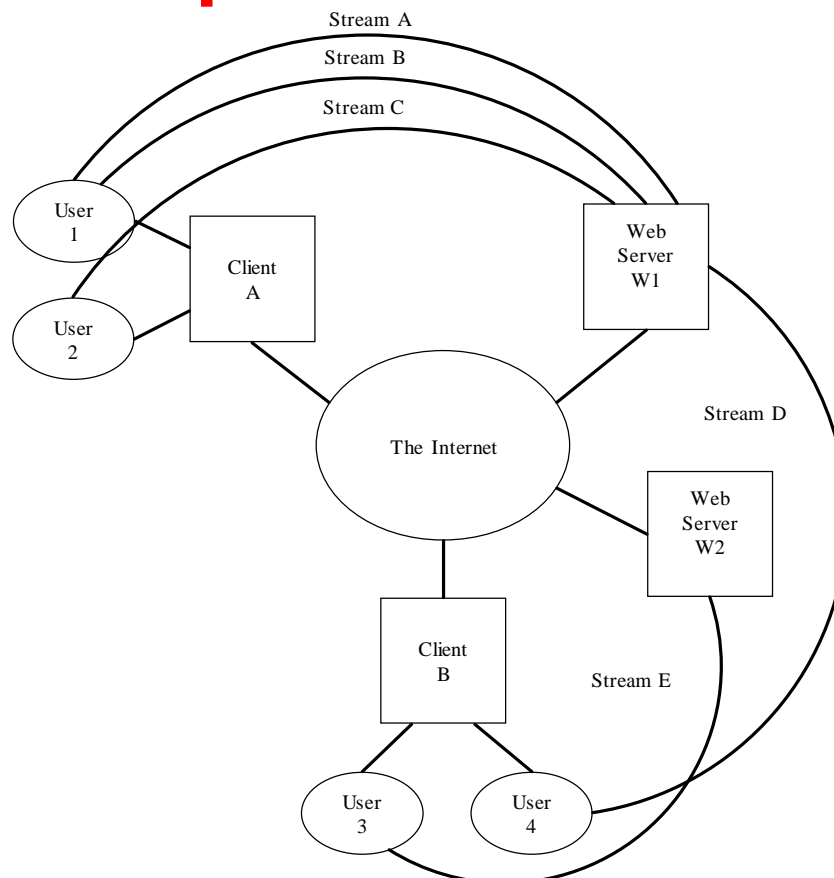
# Client Server model



# Client Server Model

| Packets from client to server |   |
|-------------------------------|---|
| Source IP                     | Client's IP address                     |
| Destination IP                | Server's IP address                     |
| Source Port                   | Ephemeral port                          |
| Destination Port              | Server's port number (often well known) |
| Packets from server to client |   |
| Source IP                     | Server's IP address                     |
| Destination IP                | Client's IP address                     |
| Source Port                   | Server's port number (often well known) |
| Destination Port              | Ephemeral port                          |

## Multiple Connections



# Multiple Connections

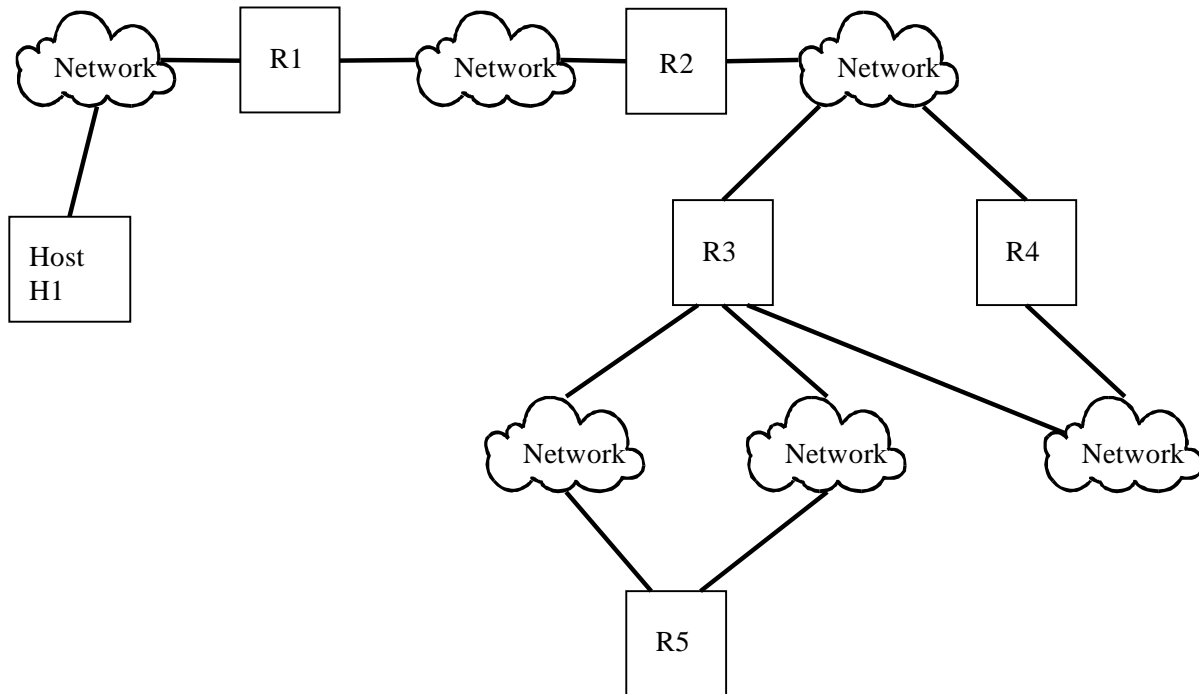
| Stream | Source IP | Destination IP | Source Port  | Destination Port |
|--------|-----------|----------------|--------------|------------------|
| A      | A         | W1             | Ephemeral A1 | 80               |
| B      | A         | W1             | Ephemeral A2 | 80               |
| C      | A         | W1             | Ephemeral A3 | 80               |
| D      | B         | W1             | Ephemeral B1 | 80               |
| E      | B         | W2             | Ephemeral B2 | 80               |

## Routing

- All hosts and gateways store routing tables
- Each row in the route table contains:
  - Destination address or address range
  - Next hop for that destination address range
  - The physical interface to use for that address range. (ie: which Ethernet card to use)

Example:   **Destination**            **Next**                    **Interface**  
                 129.186.4.0            129.186.5.254            en0

# Routing



## Dynamic vs Static

- Static
  - Tables built at system configuration time.
  - Used in small networks or networks with only one way out
- Dynamic
  - Tables are modified based on network parameters
  - Used in larger networks with multiple paths

# Routing Example

| Destination | Next Hop  |
|-------------|-----------|
| Network 1   | Direct    |
| Default     | Router R1 |

