DYNAMIC HOST CONFIGURATION PROTOCOL (DHCP)

Two types of IP Addresses

- DHCP is used to assign IP addresses to hosts or workstations on the network
- Two types of IP addresses:
  - Static
    - Is a number that is assigned to a computer by an Internet service provider (ISP) to be its permanent address on the Internet
  - Dynamic
    - The temporary IP address is called a dynamic IP address

Why is DHCP Important?

- Important when it comes to adding a machine to a network
- When computer requests an address, the administrator would have to manually configure the machine
  - ✔ Mistakes are easily made
  - ✔ Causes difficulty for both administrator as well as neighbors on the network
- DHCP solves all the hassle of manually adding a machine to a network

How does DHCP work?

- When a client needs to start up TCP/IP operations, it broadcasts a request for address information
- The DHCP server will not reallocate the address during the lease period and will attempt to return the same address every time the client requests an address
- The client can extend its lease or send a message to the server before the lease expires it that it no longer needs the address so it can be released and assigned to another client on the network

Advantages of DHCP

- DHCP minimizes the administrative burden
- By using DHCP there is no chance to conflict IP address
- By using DHCP relay agent you provide IP address to another network

Disadvantages of DHCP

- When DHCP server is unavailable, client is unable to access enterprises network
- Your machine name does not change when you get a new IP address

Security problem

- DHCP is an unauthenticated protocol
  - When connecting to a network, the user is not required to provide credentials in order to obtain a lease
  - Malicious users with physical access to the DHCP-enabled network can instigate a denial-of-service attack on DHCP servers by requesting many leases from the server, thereby depleting the number of leases that are available to other DHCP clients

Easy to set-up and administer

- DHCP servers are easy to administer and can be set-up in just a few minutes
- Client addresses are assigned automatically

Limitations

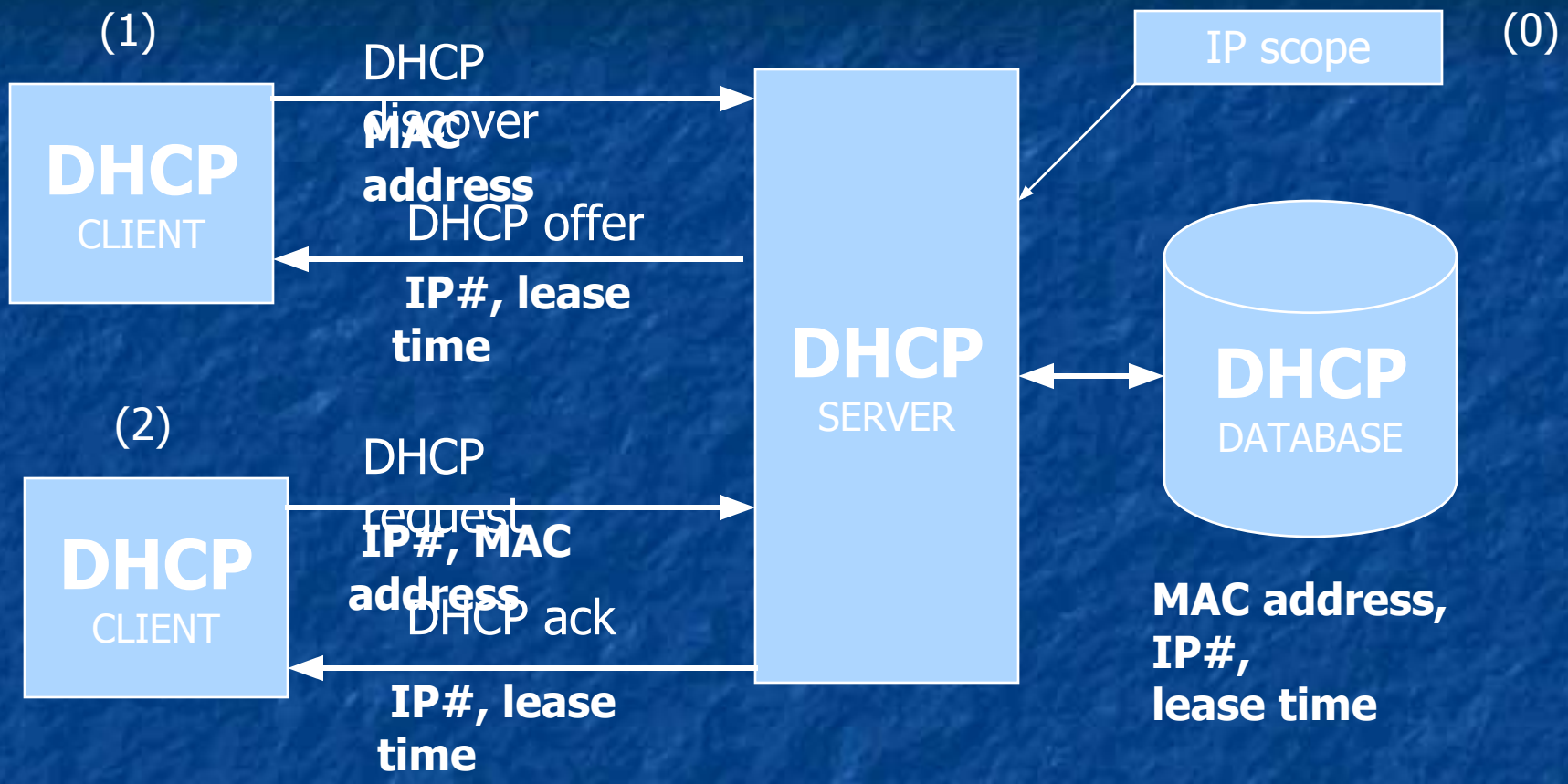
- Some machines on your network need to be at fixed addresses, for example servers and routers
- You need to be able to assign a machine to run the DHCP server continually as it must be available at all times when clients need IP access

DHCP Commands

DHCP discover
DHCP offer

DHCP request
DHCP ack

How does it works…



- **Scope** - a range of IP addresses
- **IP lease** - the IP# is assigned temporarily
- **Reserved IP** - servers are assigned fixed IP addresses