

# COMPUTER NETWORKS LAB (CS315)

## Assignment-9

### DHCP

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# DHCP: Dynamic Host Configuration Protocol

**goal:** allow host to *dynamically* obtain its IP address from network server when it joins network

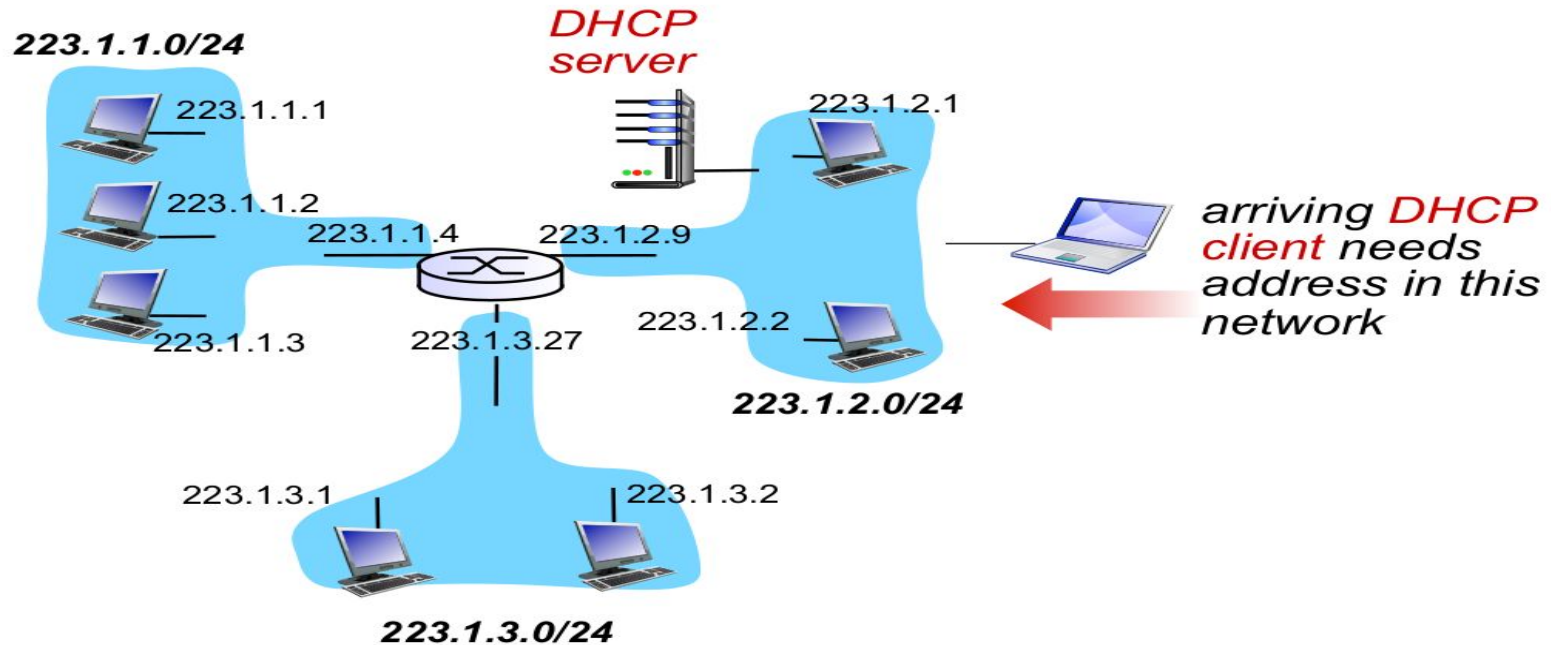
- can renew its lease on address in use
- allows reuse of addresses (only hold address while connected/“on”)
- support for mobile users who want to join network (more shortly)

## **DHCP overview:**

- host broadcasts “**DHCP discover**” msg [optional]
- DHCP server responds with “**DHCP offer**” msg [optional]
- host requests IP address: “**DHCP request**” msg
- DHCP server sends address: “**DHCP ack**” msg



# DHCP client-server scenario



# DHCP client-server scenario

DHCP server: 223.1.2.5



**DHCP discover**

Broadcast: is there a DHCP server out there?

arriving client



**DHCP offer**

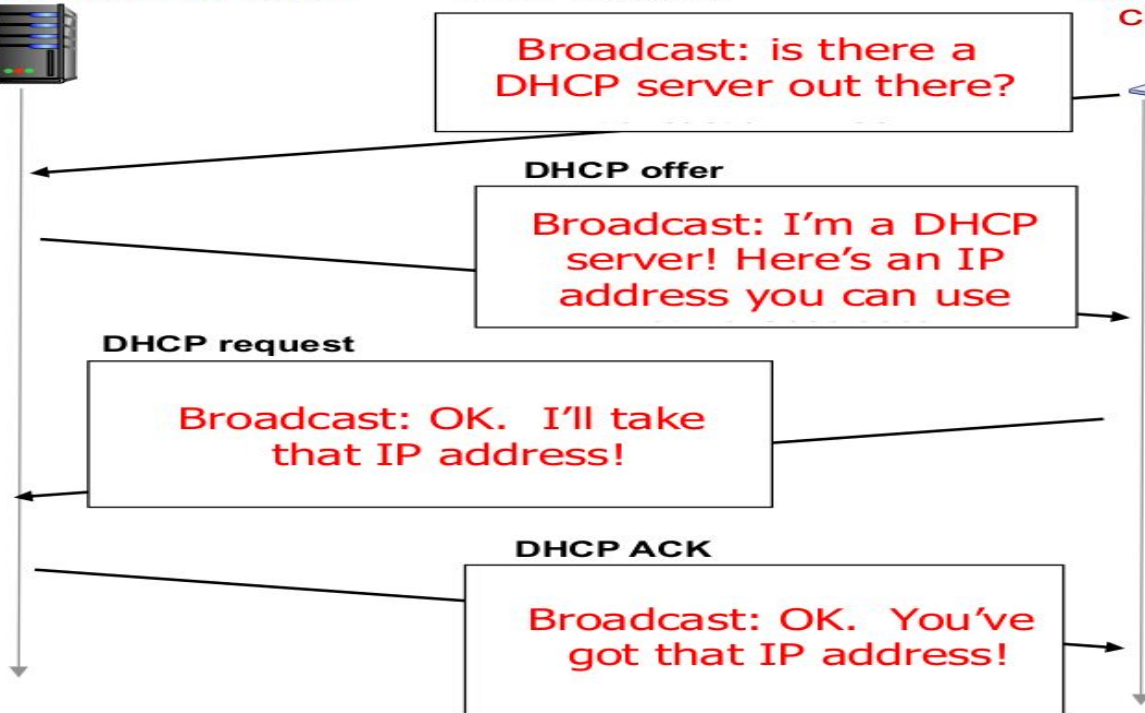
Broadcast: I'm a DHCP server! Here's an IP address you can use

**DHCP request**

Broadcast: OK. I'll take that IP address!

**DHCP ACK**

Broadcast: OK. You've got that IP address!



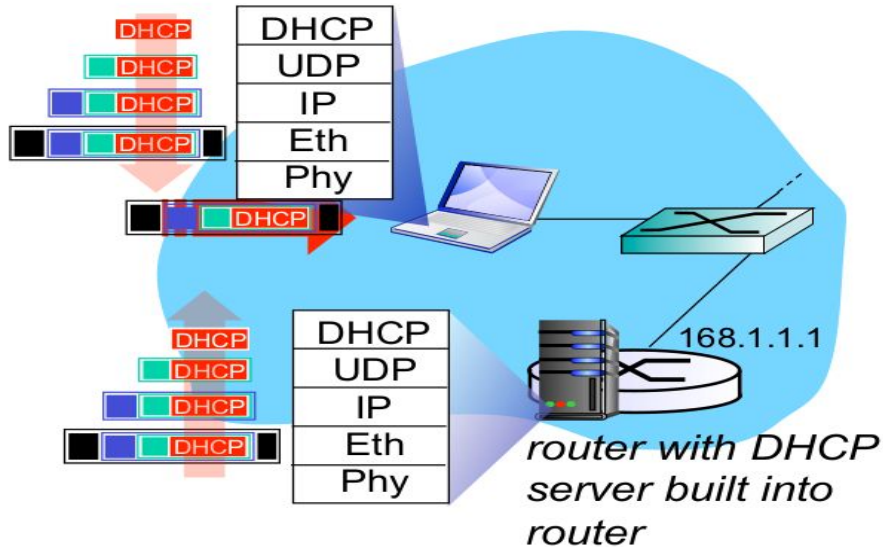
# DHCP: more than IP addresses

DHCP can return more than just allocated IP address on subnet:

- address of first-hop router for client
- name and IP address of DNS sever
- network mask (indicating network versus host portion of address)



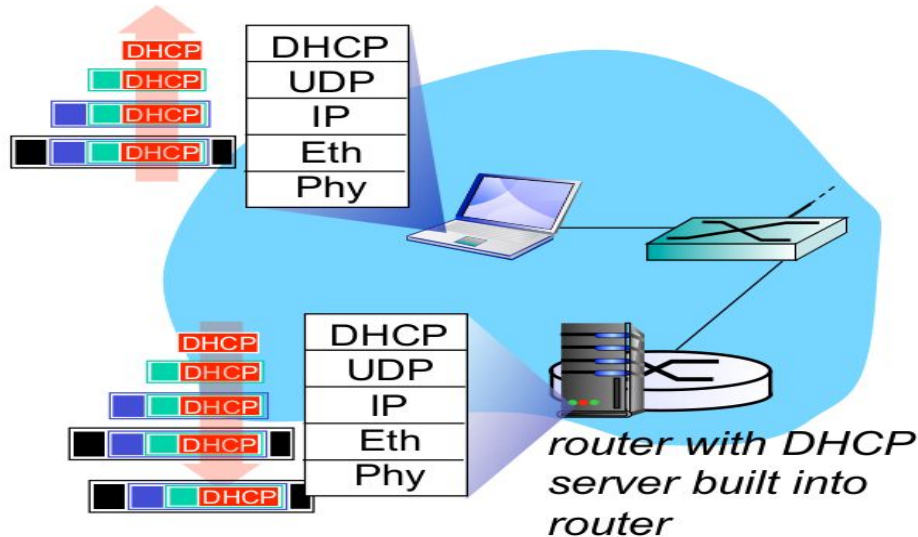
# DHCP: example



- ❖ connecting laptop needs its IP address, addr of first-hop router, addr of DNS server: use DHCP
- ❖ DHCP request encapsulated in UDP, encapsulated in IP, encapsulated in 802.1 Ethernet
- ❖ Ethernet frame broadcast (dest: FFFFFFFF) on LAN, received at router running DHCP server
- ❖ Ethernet demuxed to IP demuxed, UDP demuxed to DHCP



# DHCP: example



- ❖ DCP server formulates DHCP ACK containing client's IP address, IP address of first-hop router for client, name & IP address of DNS server
- ❖ encapsulation of DHCP server, frame forwarded to client, demuxing up to DHCP at client
- ❖ client now knows its IP address, name and IP address of DSN server, IP address of its first-hop router

# Thank you