

DHCP OVERVIEW

What is DHCP

The Dynamic Host Configuration Protocol (DHCP) is a client/server protocol used on Internet Protocol (IP) networks for automatically assign network configuration parameters, such as IP addresses, Default gateway, dns for interfaces and services.

How DHCP client server model work ?

DORA PROCESS

When a new client come to the network, It broadcast a **DHCP DISCOVER** packet to find the dhcp server in network.

Once dhcp server receive the DHCP DISCOVER packet. It replies with **OFFER PACKET** contains ip address, subnet mask, gateway.

Once client select the offer it broadcast a **DHCP REQUEST** to the dhcp server.

Once dhcp server receive the dhcp request it stores the IP address client information in the DHCP database and broadcasts **DHCPACK** message

**Hey ! I am new In
Network**



DHCP SERVER

**Broadcasting
DHCP
DISCOVER**



DHCP SERVER



00-8E-FC-14-08



DHCP SERVER



**I have received
your
Packet**



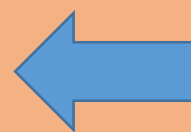
DHCP SERVER



**I am sending
you an offer**



DHCP SERVER



192.168.1..x
255.255.255.0
192.168.1.1



DHCP SERVER

**I Like your offer, I
am requesting
you to lease me
offered address**



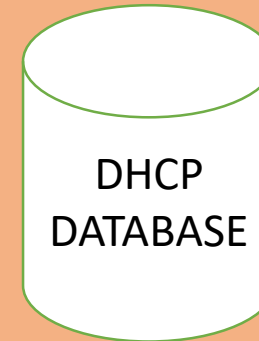
DHCP SERVER



Request

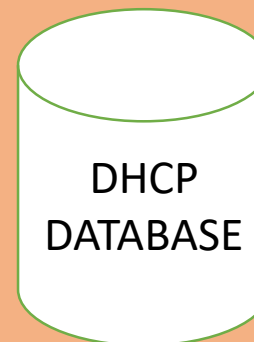


DHCP SERVER



DHCP SERVER

Ok. I have updated the record in my database.



DHCP SERVER

DHCP SCOPE

A **Dynamic Host Configuration Protocol (DHCP) scope** is the consecutive range of possible IP addresses that the **DHCP** server can lease to clients on a subnet. **Scopes** typically define a single physical subnet on your network to which **DHCP** services are offered

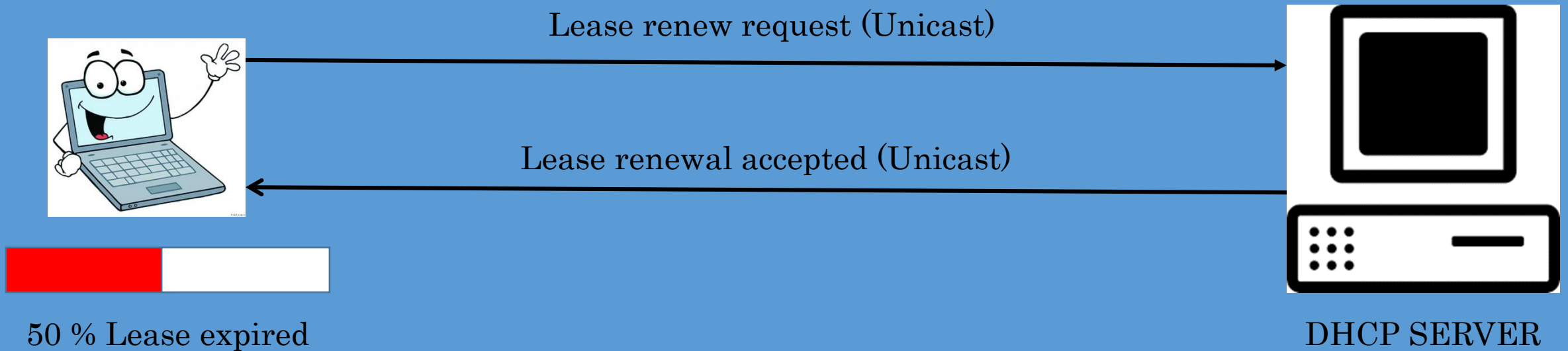
DHCP LEASE

DHCP server assign an IP address to a client in the form of lease.

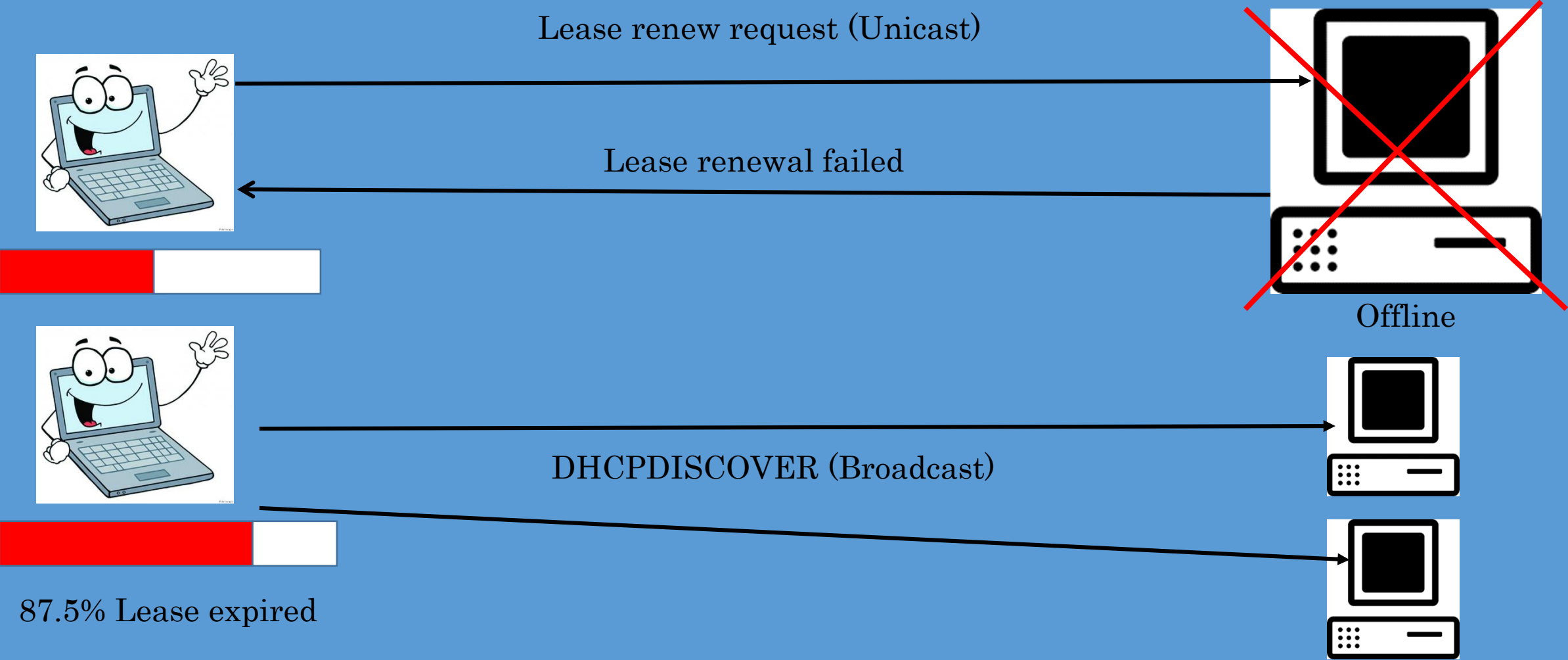
A lease is a period in which IP address allocation is valid only up to a contract period.

LEASE RENEWEL PROCESS

T1: It's a first timer which start at the 50% of completion of lease period. Client computer submits a request to renew the lease to the dhcp server. If dhcp server is online then it accept the request and renew the lease.



T2: It's a second timer which start at 87.5% of completion of lease period. In case client computer could not renew the lease due to dhcp server unavailable by this time then client comes to the binding stage and tries to locate new server and tries to acquire different ip address.



WHAT WILL HAPPEN WHEN DHCP SERVER IS OFFLINE DURING CLIENT STARTUP ?

If the client computer is still under lease period and there is no dhcp server available at startup time then client computer ping to the gateway that was assigned previously by the dhcp server. If gateway respond back then client assumes that it is still in the same network and hence keep on using same IP address.

If client can't get the response from the gateway, it will consider itself to be out of network and hence will auto configure ip address (APIPA)

APIPA

Short for **Automatic Private IP Addressing**, a feature of later Windows operating systems. With APIPA, dhcp clients can automatically self-configure an ip address and subnet mask when a DHCP server isn't available

APIPA IP Range is 169.254.0.0 to 169.254.255.254