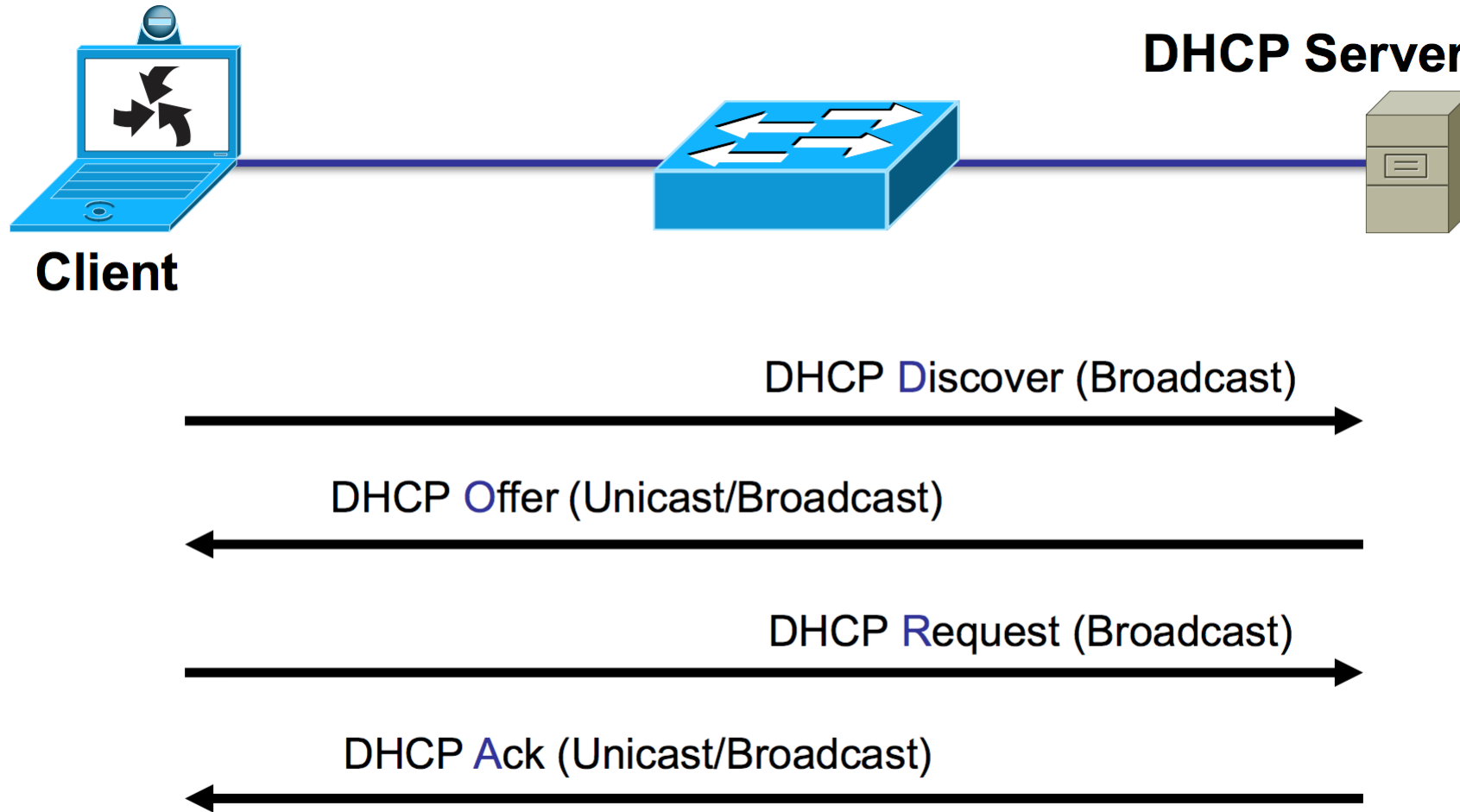


DHCP – Dynamic Host Configuration Protocol

- DHCP is a client/server protocol that automatically provides a host with its IP address and other related configuration information such as the subnet mask and default gateway.
- DHCP clients obtain their IP configuration information from a DHCP server, rather than being manually configured.

DHCP – Dynamic Host Configuration Protocol



See: DHCP defined by RFC 2131

DHCP Benefits – Reduced Network Admin

- Centralized and automated IP configuration, rather than manually assigning an IP address to every host.
- Can assign additional IP configuration values by means of DHCP options.
- Efficient handling of clients that must be updated frequently, such as laptops that move to different locations on a wireless network.
- The forwarding of initial DHCP messages by using a DHCP relay agent, which eliminates the need for a DHCP server on every subnet.

DHCP Benefits - Reliable IP address configuration

- DHCP minimizes configuration errors caused by manual IP address configuration, such as typos, or address conflicts caused by the assignment of an IP address to more than one computer at the same time.

DHCP Clients



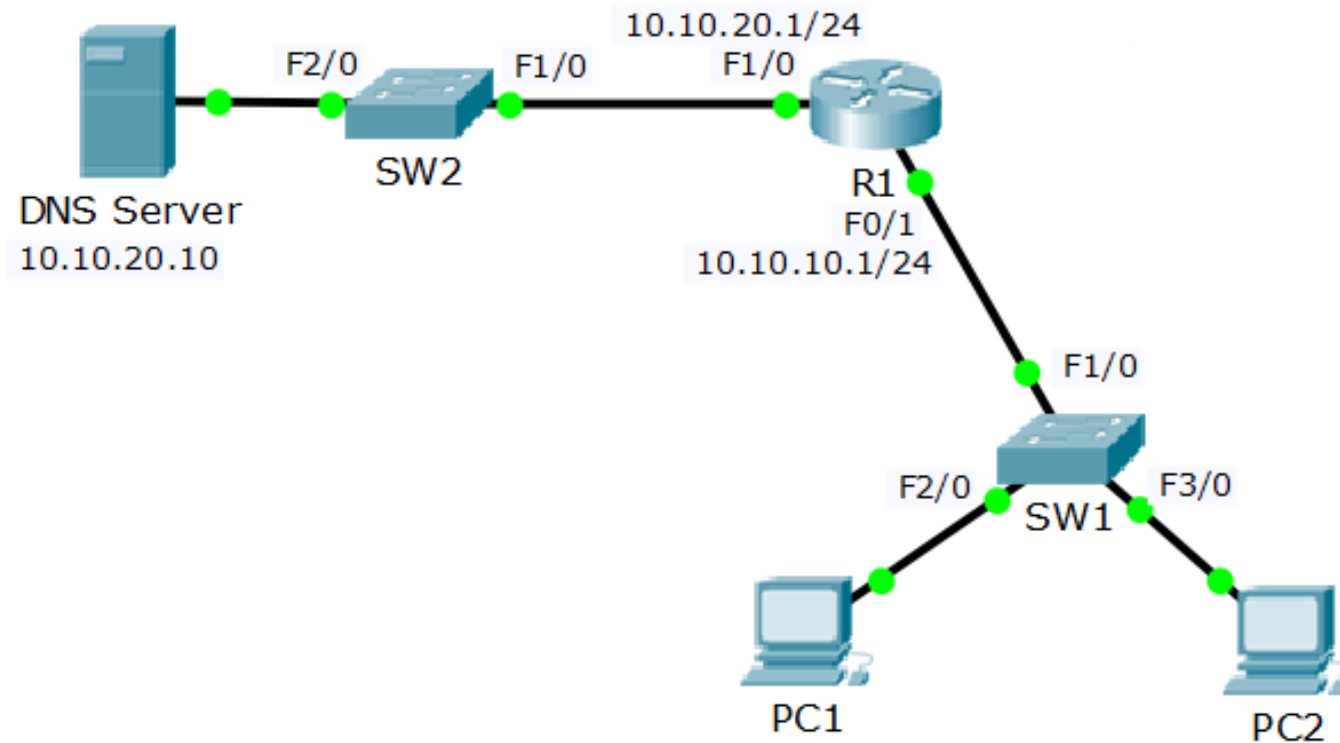
- Desktop PCs are good candidates to be DHCP clients because there will typically be many of them in an office. Using DHCP saves a lot of admin work that would be necessary if manually configuring IP addresses.
- They do not accept incoming connections so it does not matter if their IP address changes.

DHCP Clients



- Servers and network infrastructure devices such as routers and switches will not typically be DHCP clients.
- They are mission critical devices which do not move and are required for the network and its services to function.
- Their IP addresses are manually configured to ensure they will not change and are not dependant on DHCP.

Option 1: Cisco DHCP Server Configuration



Option 1: Cisco DHCP Server Configuration

```
R1(config)#ip dhcp excluded-address 10.10.10.1 10.10.10.10
R1(config)#ip dhcp pool 10.10.10.0_Clients
R1(dhcp-config)#network 10.10.10.0 255.255.255.0
R1(dhcp-config)#default-router 10.10.10.1
R1(dhcp-config)#dns-server 10.10.20.10
```


Verification – show ip dhcp pool



```
R1#show ip dhcp pool
```

```
Pool 10.10.10.0_Clients :  
Utilization mark (high/low) : 100 / 0  
Subnet size (first/next) : 0 / 0  
Total addresses : 254  
Leased addresses : 2  
Excluded addresses : 1  
Pending event : none
```

```
1 subnet is currently in the pool  
Current index IP address range Leased/Excluded/Total  
10.10.10.1 10.10.10.1 - 10.10.10.254 2 / 1 / 254
```

Verification – show ip dhcp binding



```
R1#show ip dhcp binding
```

IP address	Client-ID/ Hardware address	Lease expiration	Type
10.10.10.12	0000.0CA0.A359	--	Automatic
10.10.10.11	0002.164E.D116	--	Automatic

Lab

