#### Lab 2

# Static and Dynamic Addressing

#### Network Address mean?

A network address is any logical or physical address that uniquely distinguishes a network node or device over a computer or telecommunications network. It is a numeric/symbolic number or address that is assigned to any device that seeks access to or is part of a network

#### **Types of Network Addressing**

There are three types of addressing in computer network, these are:

- 1. Physical address: this type of address is also called MAC address or link address. The long of MAC address is 48 bit and it unique for each device. The MAC address cannot be change even the device connect to different networks.
- 2. Logical address: this is the IP address of the device. It's a 32 bit long and it can be change every time the device connect to new network. There are two type of logical address which are IPV4 and IPV6. There are many differences between them.

#### How the device can get a new logical address?

There are two methods can be used to gives an IP address to the device; these are:

- 1. **Static addressing:** gives address to the device manually by the network administrator. This type of address cannot be change until the administrator change it. It can't be used for large network.
- 2. Dynamic addressing: the device can get IP address automatically by using DHCP server which used DHCP protocol.

#### Aim of This Lab

- The aim of this Lab is to show how to configure devices IP address manually (static addressing) and automatically (dynamic addressing) using cisco packet tracer.
- After this Lab, the Student can know how to work with DHCP server and how to configure it by using cisco packet tracer.

## **Experiment Procedure**

- 1. Design the network which consist of
  - a) 3 PCs.
  - b) Switch.
  - c) DHCP server.



Figure 1

2. Configure the IP address of PCs statically as shown in figure below.

	- 🗆 X
IP Configuration X IP Configuration O DHCP	http://
IP Address192.168.10.1Subnet Mask255.255.255.0Default Gateway	Web Browser
IPv6 Configuration         O DHCP       O Auto Config Interview         IPv6 Address       /         Link Local Address       FE80::290:28FF:FE40:D918         IPv6 Gateway	Cisco IP Communicator
Figure 2	×
IP Configuration O DHCP	Web Browser

Figure 3

PC2		-		×
IP Configuratio	n X			
IP Configuration O DHCP   O S IP Address	Static 192.168.10.3	h	ttp:	)
Subnet Mask	255.255.255.0	Web	Brows	er
Default Gateway DNS Server		Ĺ		
IPv6 Configuration				5
O DHCP O Auto	Config 🖲 Static	Ci	sco IP	
IPv6 Address		Comn	nunicat	tor
Link Local Address	FE80::20D:BDFF:FEAD:69E8			
IPv6 Gateway				
IPv6 DNS Server				

Figure 4

3. Now we want to check that the network is work correctly; this can be done by put message on any PC and send it to any other PC.

### 4. Configure the IP address of PCs dynamic as shown below.

- Connect the network shown if figure 5.
- Add to the network DHCP server.





- 5. Configure the DHCP server as below
  - Click on server
  - Goto desktop and give static address

Rever 0	- 🗆	×
Physical Config Desktop Custom Interface		
IP Configuration X	http:	/
Interface FastEthernet0 🔻		
IP Configuration		
○ DHCP	/eb Brows	er
IP Address 192.168.1.1		
Subnet Mask 255.255.0		
Default Gateway		
DNS Server		
-IPv6 Configuration		
○ DHCP ○ Auto Config		
IPv6 Address /		
Link Local Address FE80::250:FFF:FE0E:14BD		
IPv6 Gateway		
IPv6 DNS Server		

• Go to config. on the top of the server screen and configure the server

Physical Co	onfig (	- • •						
		Desktop	Custom Inte	rface				
GLOBA	L ^	1		Glo	bal Settings			
Settings	s							
Algorithm Se	ettings	Display	Display Name DHCP Server 0					
SERVICE	ES							
HTTP		Interfa	ices		FastEthernet0		-	
DHCP		Gate	way/DNS					
TFTP		Gate	way/Divo					
DNS	_		НСР					
SYSLOG	3	St	tatic					
		Cata					1	
EMAT		Gate	way					
FTP		DNS	Server					
FIREWAL	LL	Gate	way/DNS IP	v6				
IPv6 FIREW	VALL							
INTERFA	CE		HCP					
FastEthern	net0		uto Config					
		() S	tatic					
		IPv6	Gateway					
		IPv6	DNS Server					

• Click on the left side the DHCP you will see the below window

R DHCP S	erver 0									-		$\times$
Physical	Config	D	esktop	Custom Inte	erface							
GLC	DBAL tings	^					DHCP					
Algorithm	n Settings		Servio	e		On		C	) Off			
H <sup>-</sup> Dł	ITP ICP		Pool N	lame	serve	erPool						
TI	FTP		Defau	lt Gateway	0.0.0	.0						
D	NS		DNS S	Server	0.0.0	.0						
A	AA		Start	IP Address	:		1	92	168	1	2	
N	ITP		Subne	et Mask:			2	55	255	255	0	
EM	IAIL TP		Maxim of Us	um number ers :	254							
FIRE	WALL		TFTP	Server:	0.0.0	0.0						
INTE FastEt	RFACE			Add			Save			Remove		
- rubitet			Pool N server	Nai Default G	atev C O	0NS Serv .0.0.0	Start IP Add 192.168.1.2	1 Subr 255.2	et M; 55	Max Num 254	TFTP 9	5e )
		~	٢									

- Set the service on
- Set the starting address and subnet mask
- Click save.
- 6. Go to PCs setting windows and click DHCP to get IP automatically as shown below

РСО		- 🗆 ×
IP Configuration	X	]
IP Configuration	tatic	http:
IP Address	192.168.1.2	
Subnet Mask	255.255.255.0	Web Browser
Default Gateway	0.0.0.0	
DNS Server		
IPv6 Configuration		
O DHCP O Auto	Config  Static	Cisco IP
IPv6 Address	/	Communicator
Link Local Address	FE80::290:2BFF:FE40:D91B	
IPv6 Gateway		
IPv6 DNS Server		