

COC2

SET-UP COMPUTER NETWORK

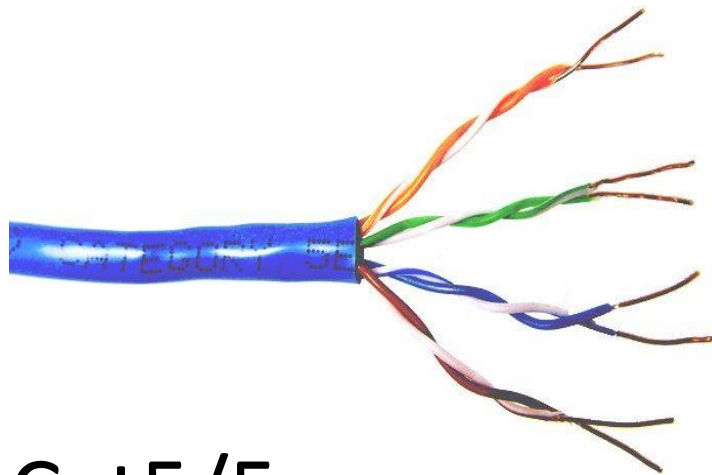
Computer Network

- Consist of two or more computers connected together through communication media to share information & resources.
 - Communication Media
 - ✓ UTP Cable
 - ✓ RJ45
 - ✓ Network Hub
 - ✓ Patch Panel
 - ✓ Router

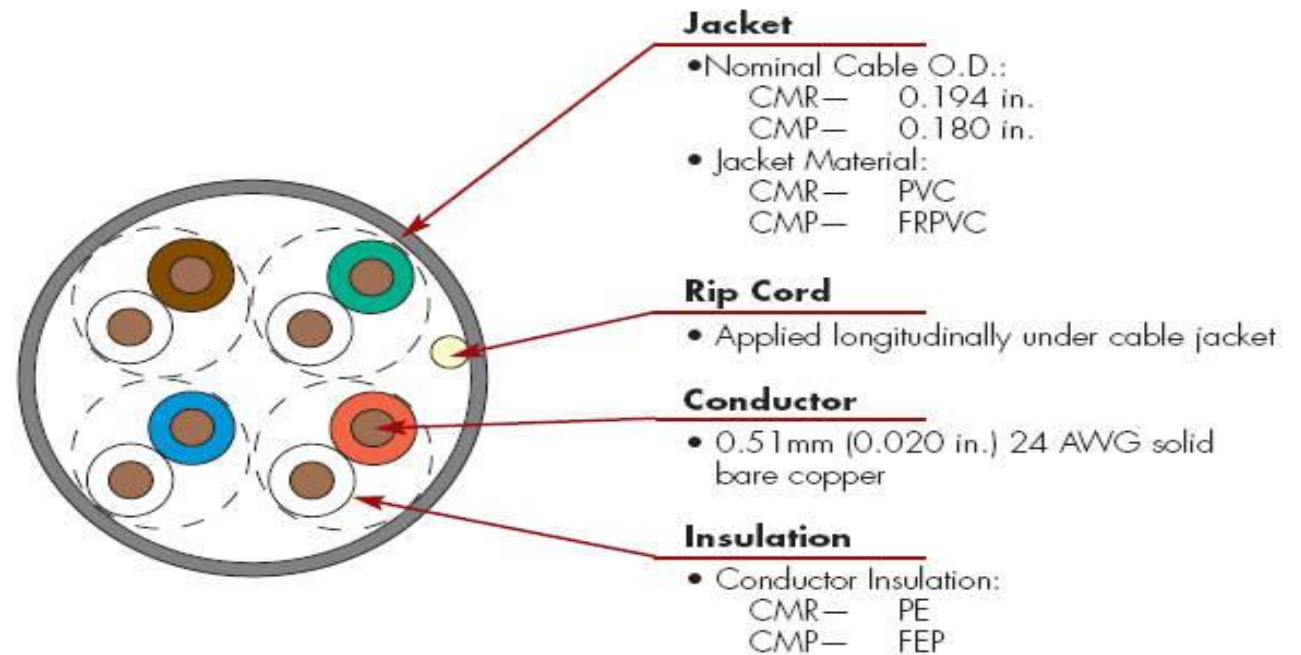
Communication Media

—UTP Cable

Unshielded Twisted Pair



Cat5/5e

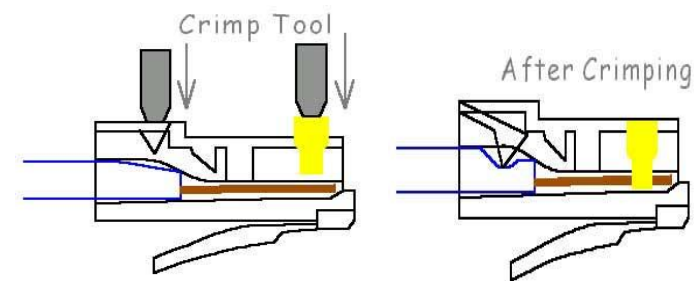


Communication Media

— RJ45

Registered Jack #45

Modular connectors were originally used in the Registration Interface system, mandated by the Federal Communications Commission(FCC) in 1976 in which they became known as registered jacks. The registered jack specifications define the wiring patterns of the jacks, not the physical dimensions or geometry of the connectors of either gender. Instead, these latter aspects are covered by ISO standard 8877, first used in ISDN systems. TIA/EIA-568 is a standard for data circuits wired on modular connectors.



Communication Media

—Network Hub/Switch

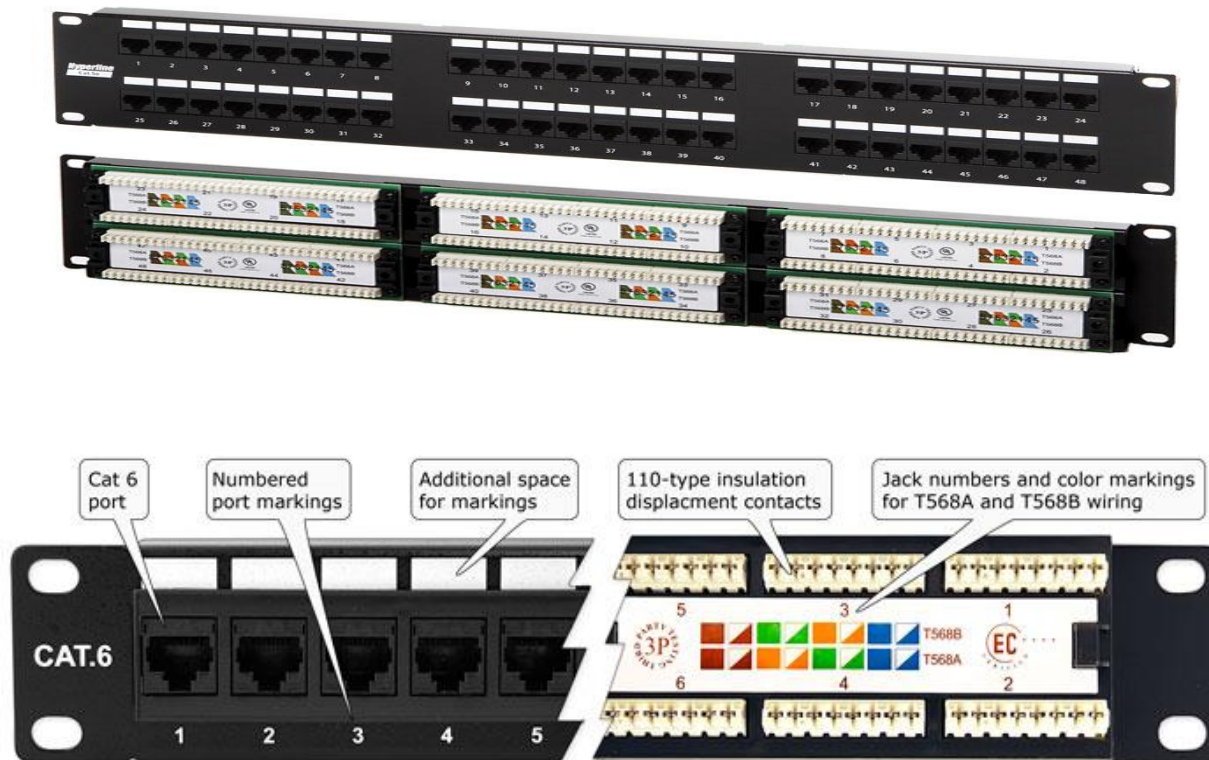
A network switch (also called switching hub, bridging hub, officially MAC bridge) is a computer networking device that connects devices together on a computer network, by using packet switching to receive, process and forward data to the destination device. Unlike less advanced network hubs, a network switch forwards data only to one or multiple devices that need to receive it, rather than broadcasting the same data out of each of its ports.



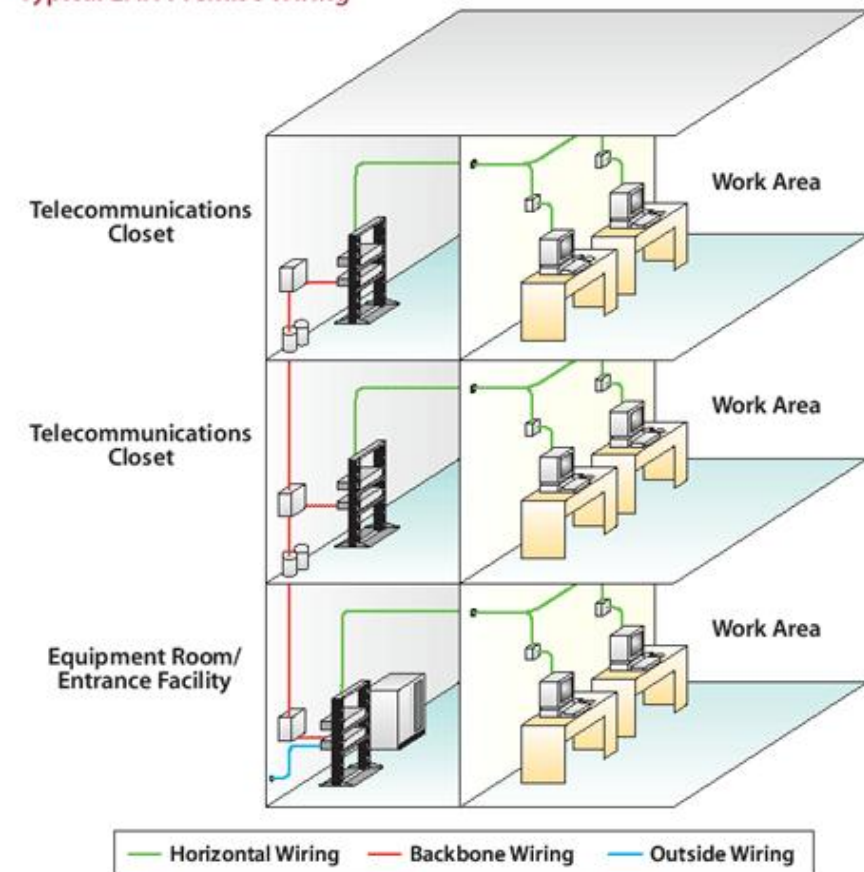
Communication Media

—Patch Panel (Power over Ethernet)

A patch panel, patch bay, patch field or jack field is a device or unit featuring a number of jacks, usually of the same or similar type, for the use of connecting and routing circuits for monitoring, interconnecting, and testing circuits in a convenient, flexible manner. aka Bridge of a network.



Typical LAN Premise Wiring



Communication Media

—Router

Used to DHCP Server

➤ ADSL

Transmit IP Address to
Server (Computer)

➤ Access Point

To extend the range of wireless connection

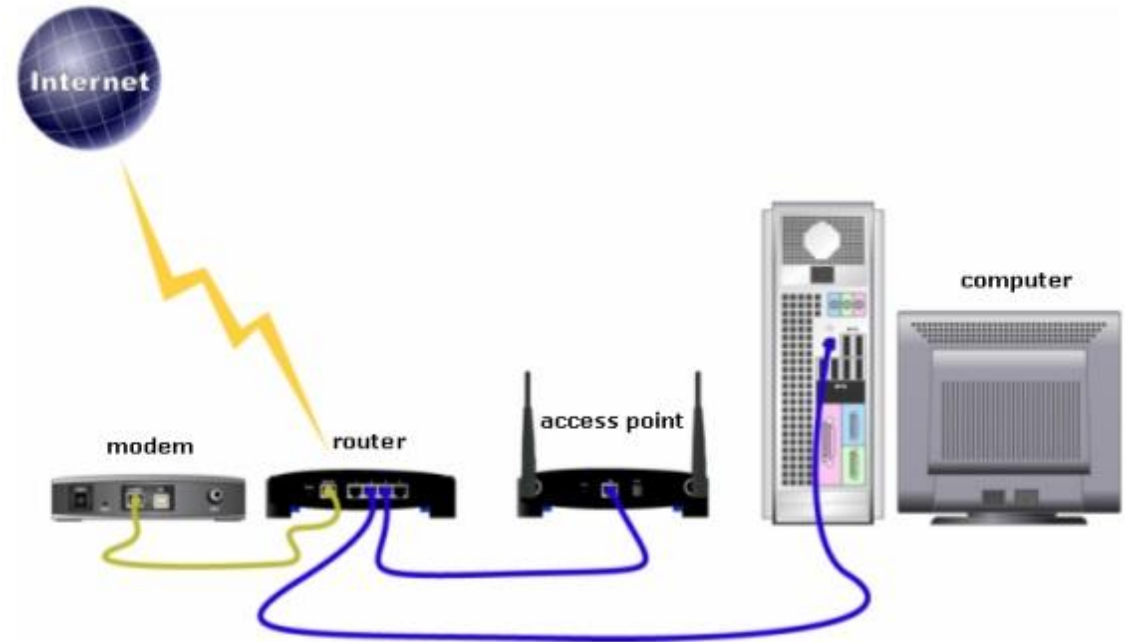
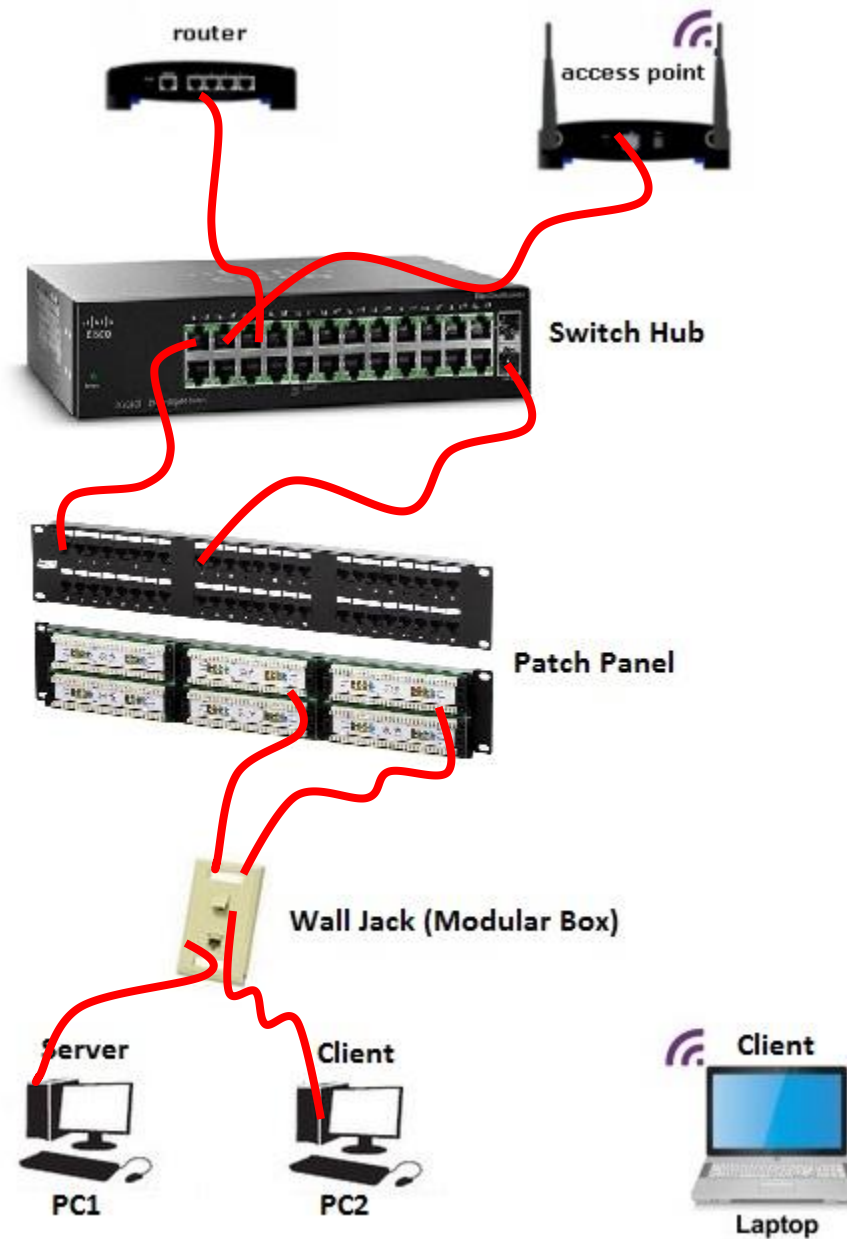
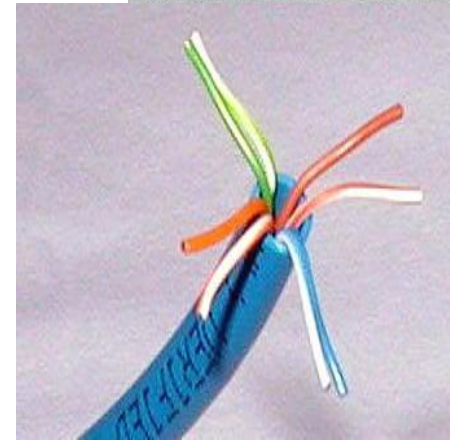


Diagram of Network on (TESDA-CSS)

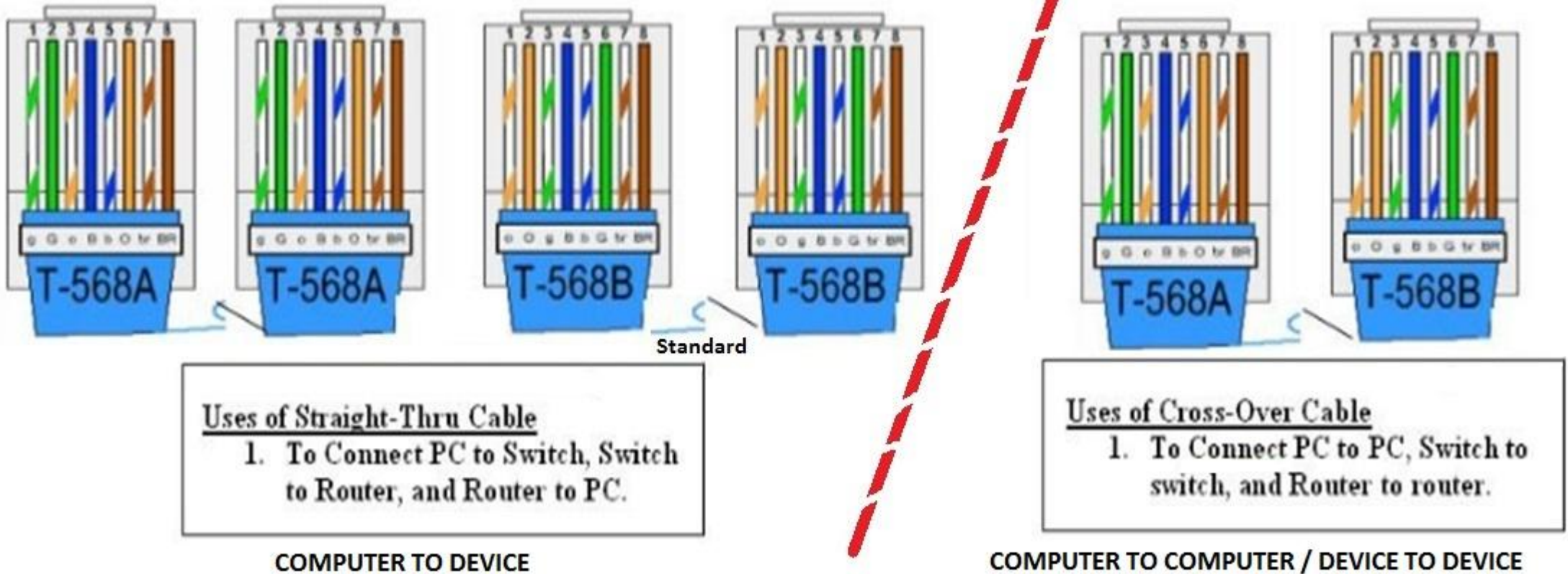


NETWORKING TOOLS NEEDED



UTP Cable (Color Coding) for RJ45

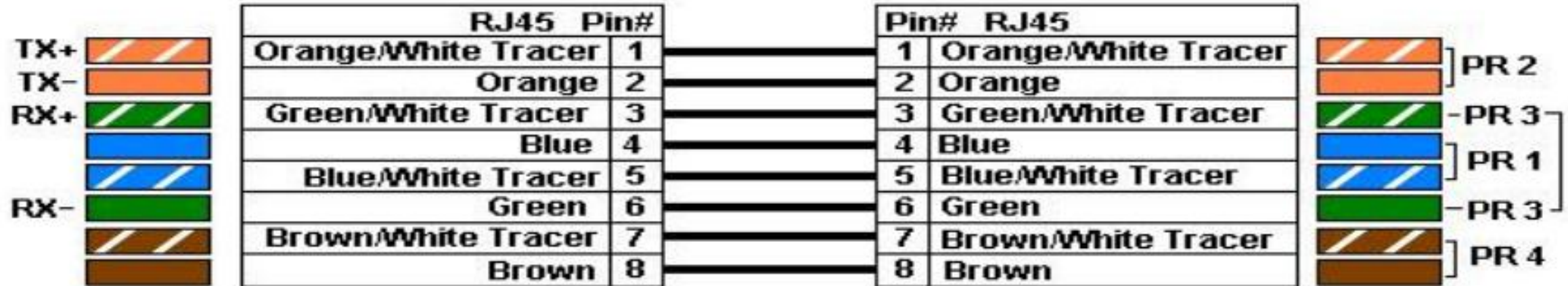
Ethernet Cable Color Coding



UTP Cable (Color Coding) for RJ45 **for RJ45**

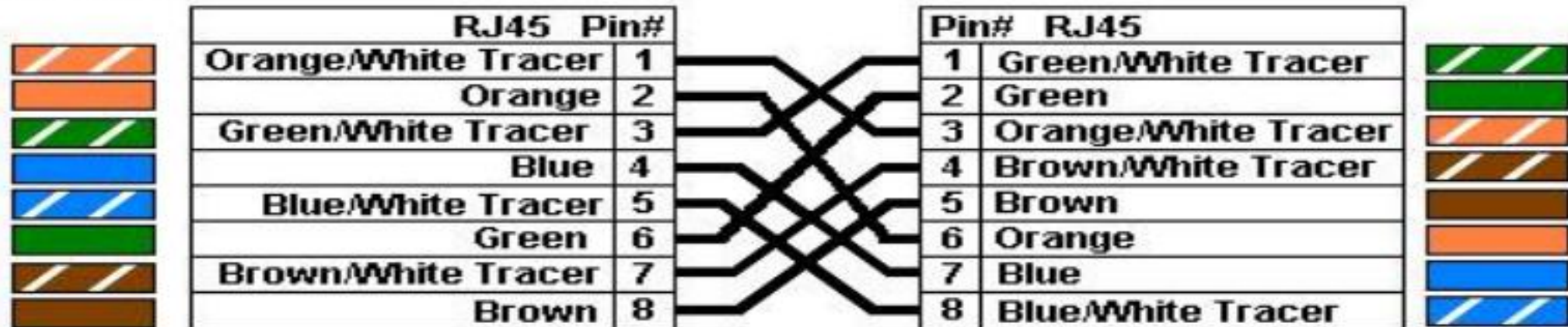
Color Standard
EIA/TIA T568B

Ethernet Patch Cable

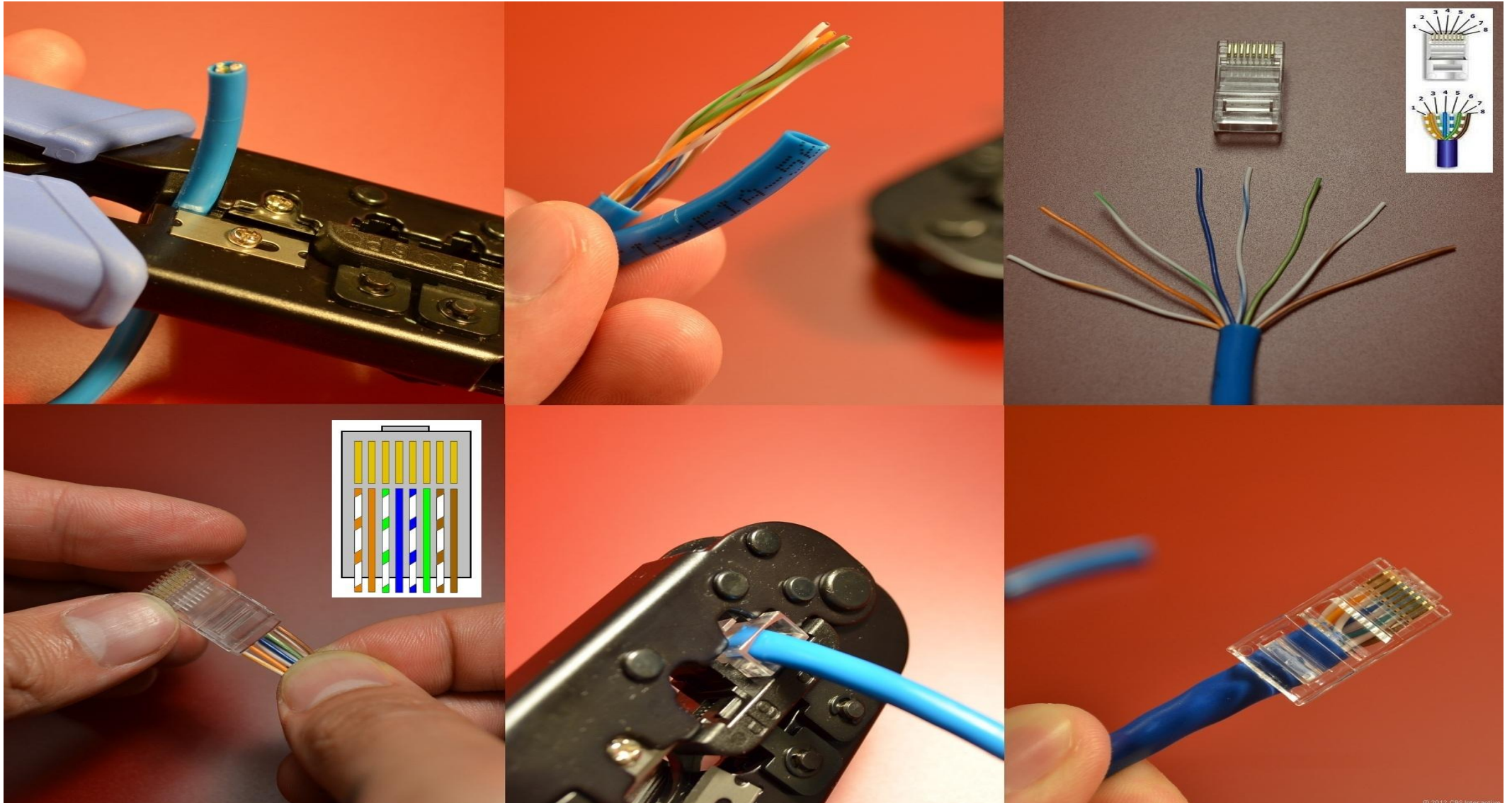


Color Standard
EIA/TIA T568B

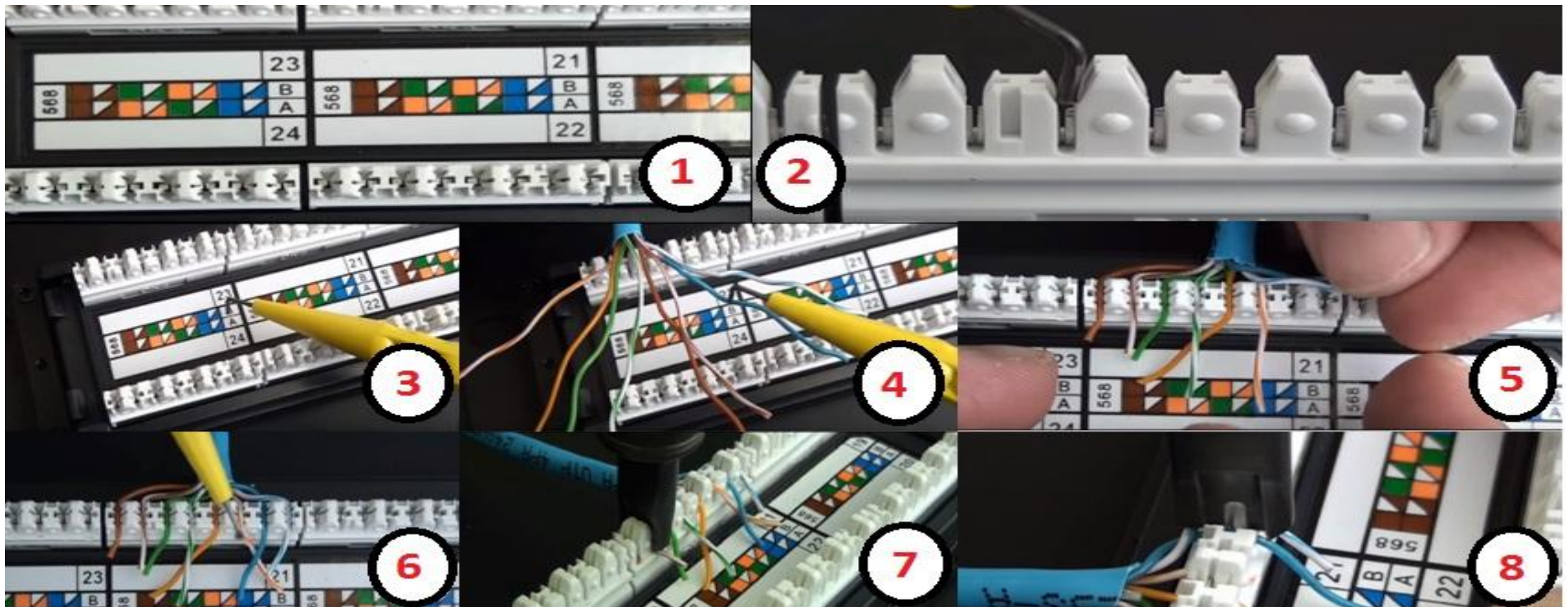
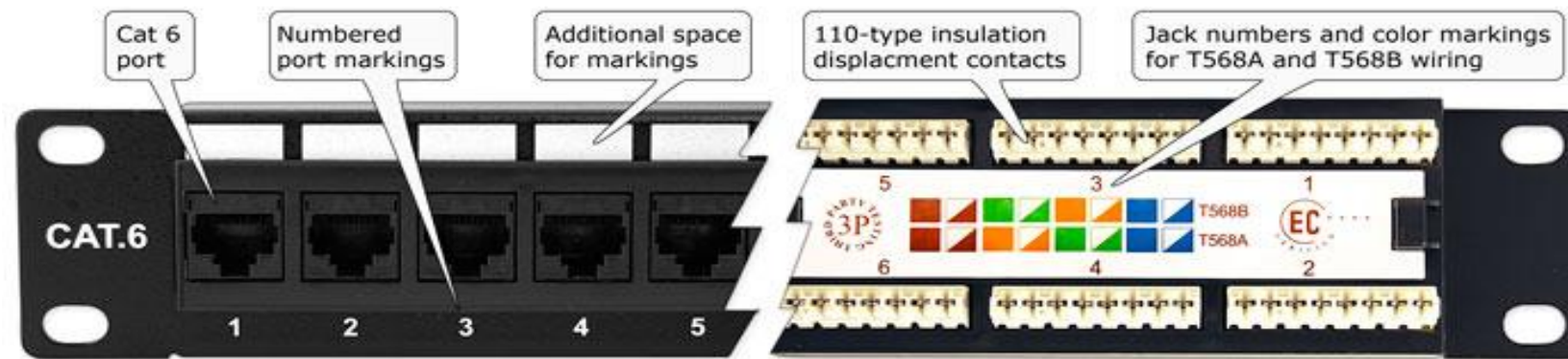
Ethernet Crossover Cable



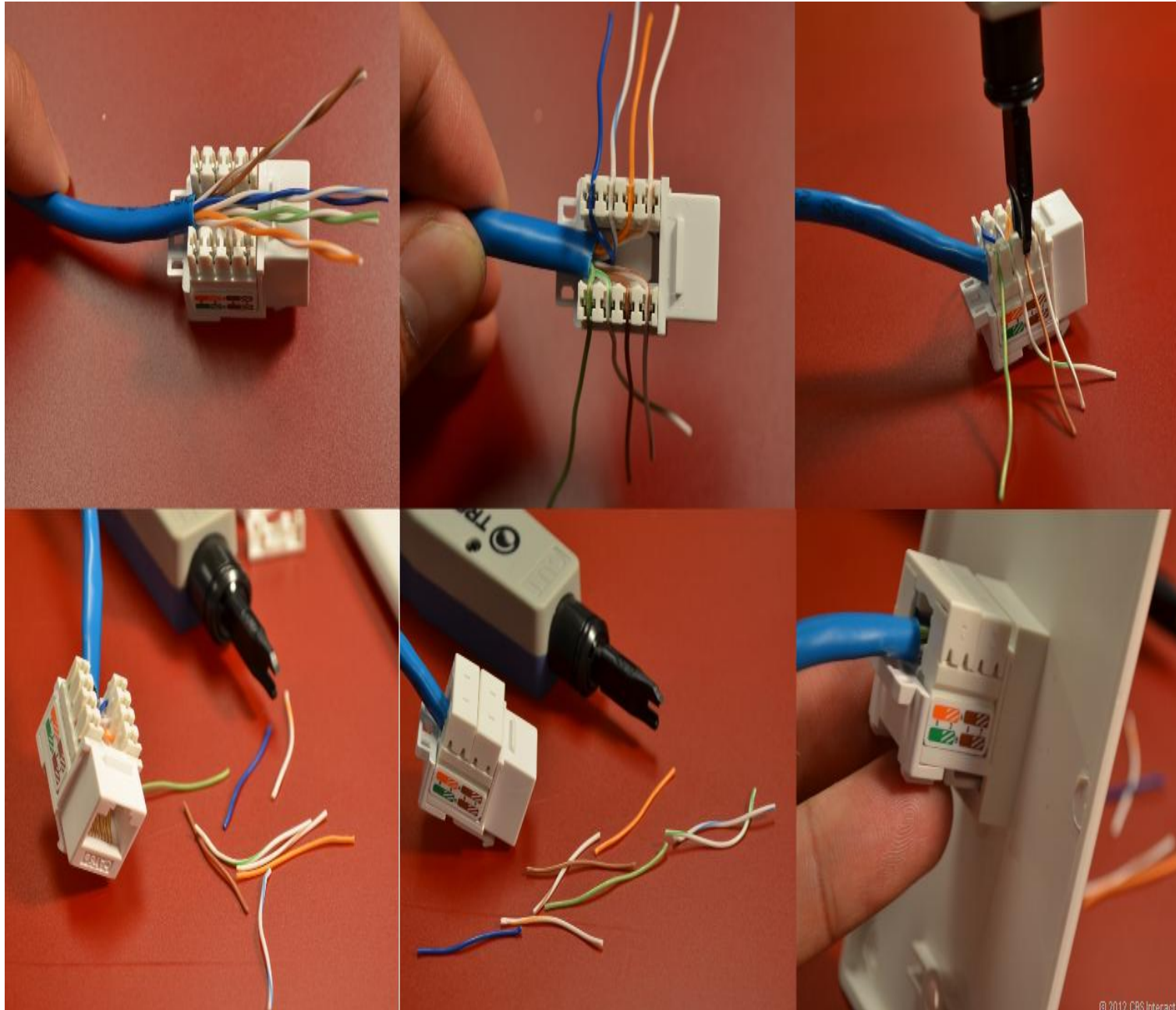
UTP Cable (Color Coding) for RJ45



UTP Cable (Color Coding) for Patch Panel



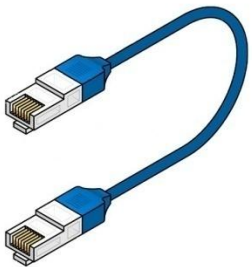
UTP Cable (Color Coding) for Patch (Modular Box)



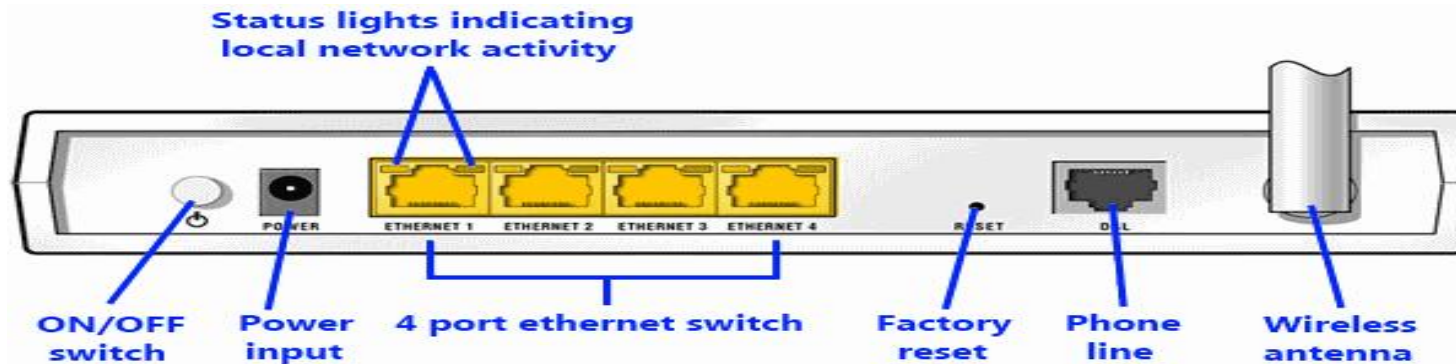
©eHome_Deals

Testing UTP Cable

(Patch Panel to Modular Box)



Configuration ROUTER and Access Point



Note: Reset the device into Factory Setting by pressing the “Factory reset” button in 5 to 10sec.

- the indicator is when the lights(LED) are flash all together or “Turn On” the device is ready or reset.

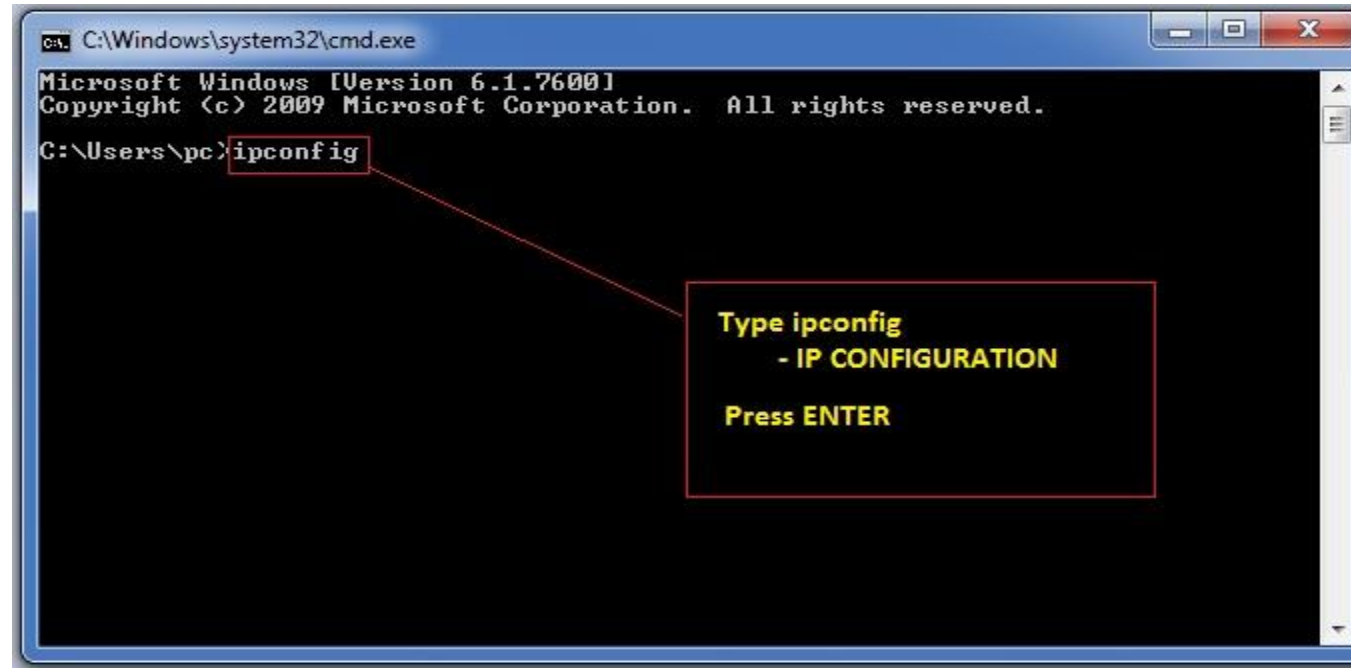
Check the connection:

- ✓ On the desktop of your Computer
 - *Network tray – next – open Network Sharing*
- ✓ On the Start Menu – Control Panel – Network & Internet
 - Network and Sharing Center – Change adapter setting – Local Area Connection(LAC)

Note: Check if your device (Router/ AP) connected

- ❖ Go to LAC – for IP ADDRESS Checking given by the ROUTER
- ❖ Go to Start – search bar – type RUN (to enter DOS or Command Prompt) – inside the DOS
 - type IPCONFIG or ipconfig

Configuration ROUTER and Access Point

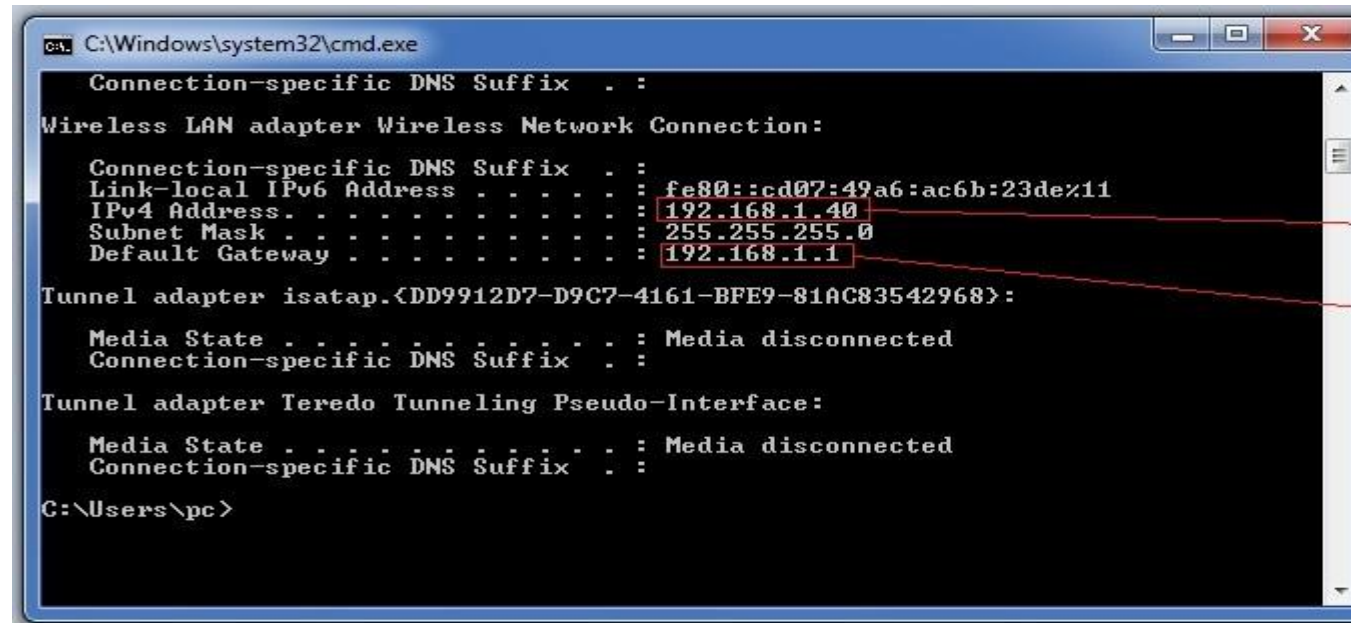


A screenshot of a Windows Command Prompt window. The title bar reads 'C:\Windows\system32\cmd.exe'. The window content shows the Microsoft Windows version 6.1.7600 copyright notice, followed by the command 'C:\Users\pc>ipconfig' entered at the prompt. A red box highlights the 'ipconfig' command. A red line points from this box to a separate text box on the right.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\pc>ipconfig
```

Type ipconfig
- IP CONFIGURATION
Press ENTER



A screenshot of a Windows Command Prompt window showing the output of the 'ipconfig' command. The title bar reads 'C:\Windows\system32\cmd.exe'. The output shows details for the 'Wireless LAN adapter Wireless Network Connection' and the 'Tunnel adapter isatap...'. The IP address '192.168.1.40' and the default gateway '192.168.1.1' are highlighted with red boxes. Red lines point from these boxes to text boxes on the right.

```
C:\Windows\system32\cmd.exe

Connection-specific DNS Suffix . :
Wireless LAN adapter Wireless Network Connection:

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::cd07:49a6:ac6b:23de%11
IPv4 Address. . . . . : 192.168.1.40
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.1

Tunnel adapter isatap.{DD9912D7-D9C7-4161-BFE9-81AC83542968}:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

Tunnel adapter Teredo Tunneling Pseudo-Interface:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

C:\Users\pc>
```

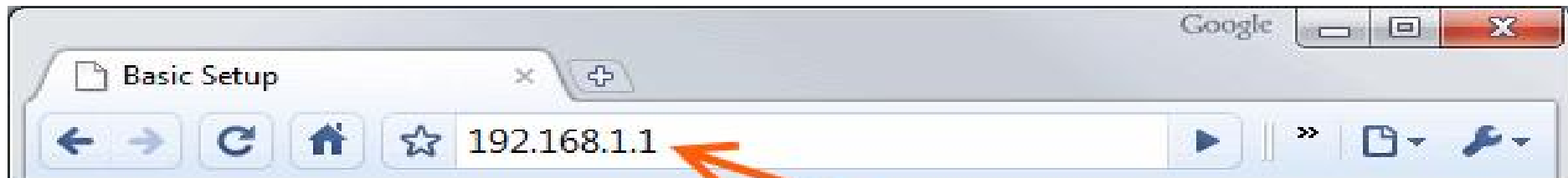
IP ADDRESS given by
the ROUTER

ROUTER Default IP
ADDRESS

Configuration ROUTER and Access Point

STEP 1: Log into the router from your computer

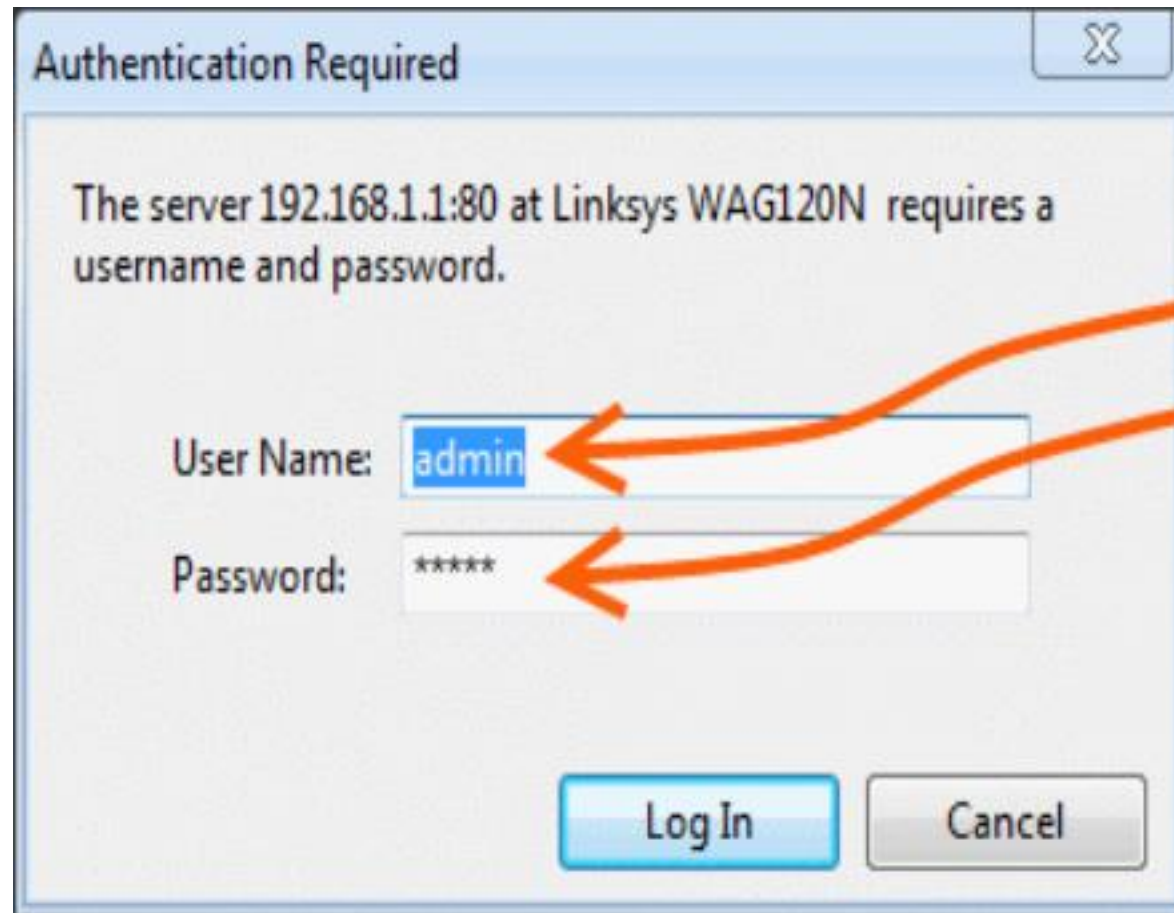
- You will need to have a working network card or port with a computer attached in order to connect to the ADSL router. These instructions assume the default router setup. This guide assumes that you have set up all the physical connections as per the welcome note, found inside the router's box or at the back of device.
- Open a browser (Internet Explorer, Mozilla Firefox , Google Chrome etc.) and type the brand of the router e.g. `http://tplinkmodem` or type `http://192.168.1.1` in the address bar



1. Enter '192.168.1.1' in the address bar of your browser and press enter or click on Go.

Configuration ROUTER and Access Point

- The browser should ask you for username and password, use username: admin and password: admin (these are the default for Linksys routers, refer to your manual if they don't work)



The screenshot shows a standard browser authentication dialog box. The title bar reads 'Authentication Required'. The main text states: 'The server 192.168.1.1:80 at Linksys WAG120N requires a username and password.' Below this, there are two input fields. The first is labeled 'User Name:' and contains the text 'admin'. The second is labeled 'Password:' and contains six asterisks '*****'. At the bottom of the dialog are two buttons: 'Log In' and 'Cancel'.

2. Enter 'admin' for both User name and Password

Configuration ROUTER and Access Point

STEP 2: Configure Local Wireless Settings

- The wireless access point is deactivated by default. To activate it securely follow the steps outlined below.
- Click on *Interface Setup*.
- Click on *Wireless*.
- Select **Activated**.
- From the *Channel* dropdown select **United States**.
- **Choose a name** for your wireless access point and enter it next to *SSID*.
- From the *Authentication Type* dropdown select **WPA-PSK**.
- **Choose a password** that is not easily guessable of at least 8 characters and enter it next to *Pre-Shared Key*.
- Click **SAVE** to save the new wireless settings.

The screenshot shows the TP-Link web interface for configuring the wireless access point. The interface is divided into several sections: Interface, Access Point Settings, Multiple SSIDs Settings, WPA-PSK, and Wireless MAC Address Filter. The 'Interface' tab is selected, and the 'Wireless' sub-tab is active. The 'Access Point Settings' section includes options for 'Access Point' (Activated/Deactivated), 'Channel' (SOUTH_AFRICA), 'Transmit Power' (High), 'Beacon Interval' (100), 'RTS/CTS Threshold' (2347), 'Fragmentation Threshold' (2346), 'DTIM' (1), and '802.11 b/g' (802.11b+g). The 'Multiple SSIDs Settings' section includes 'SSID Index' (1), 'Broadcast SSID' (Yes), 'SSID' (Your wireless network), and 'Authentication Type' (WPA-PSK). The 'WPA-PSK' section includes 'Encryption' (TKIP) and 'Pre-Shared Key' (something people can't guess). The 'Wireless MAC Address Filter' section includes 'Active' (Activated/Deactivated) and 'Action' (Allow Association). The 'SAVE' button is located at the bottom right of the page.

1. Click 'Interface Setup'
2. Click on 'Wireless'
3. Select 'Activated'
4. Select 'United States'
5. Choose a name that you will recognise
6. Choose 'WPA-PSK'
7. Choose a password
8. Click 'SAVE'

Configuration ROUTER and Access Point

STEP 3: Configure Local Area Network(LAN) Settings

- The LAN is deactivated by default. To activate it securely follow the steps outlined below.
- Click on *Interface Setup*.
- Click on *LAN*.
- **Choose and change** for your LAN IP ADDRESS and enter it next to *IP ADDRESS*.
NOTE: You must change only the third(3rd) digit of your IP (192.168.__.1)
- Click **SAVE** to save the new LAN settings.

TP-LINK® 300Mbps Wireless N ADSL2+ Modem Router

Interface Quick Start **Interface Setup** Advanced Setup Access Management Maintenance Status Help

Internet LAN **Wireless**

Router Local IP

IP Address : 192.168.1.1 Select 'IP ADDRESS'

IP Subnet Mask : 255.255.255.0

Dynamic Route : RIP2-B Direction : Both

Multicast : IGMP v2

IGMP Snoop : ☐ Disabled ☒ Enabled

DHCP

DHCP : ☐ Disabled ☒ Enabled ☐ Relay

DHCP Server

Starting IP Address : 192.168.1.100

IP Pool Count : 101

Lease Time : 1 seconds (0 sets to default value of 259200)

Physical Ports : ☒ 1 ☒ 2 ☒ 3 ☒ 4

DHCP Table

Hostname	IP Address	MAC Address	Status	Expire Time
	192.168.1.100	Manual Config	Static	
infomaniac	192.168.1.102	98:FE:94:4C:B1:7C	Auto	89days, 23:20:11
infomaniac	192.168.1.103	48:D7:05:CB:54:D5	Auto	89days, 22:46:0

DNS

DNS Relay : Use Auto Discovered DNS Server Only

Primary DNS Server : N/A

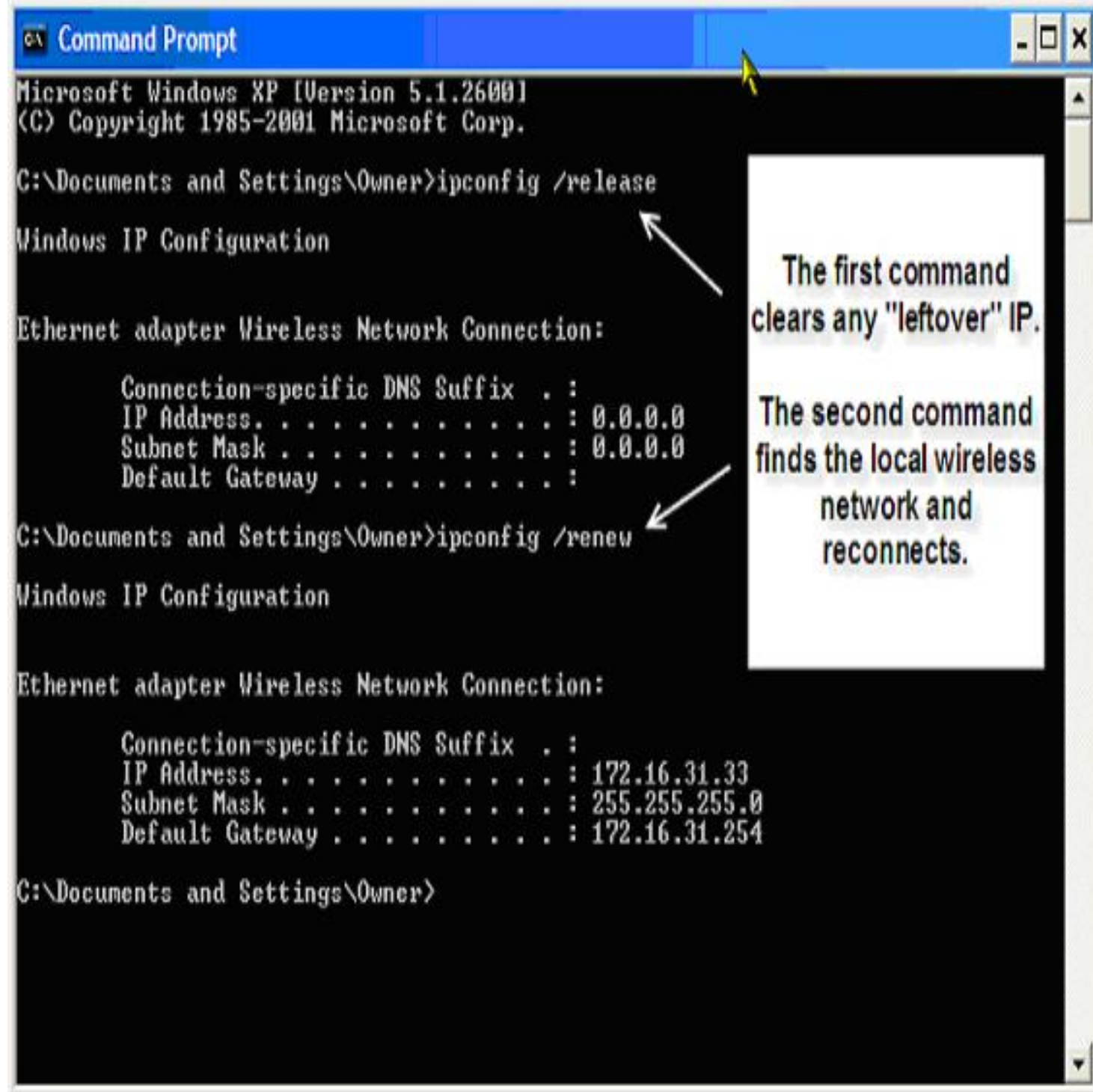
Secondary DNS Server : N/A

SAVE CANCEL

Configuration ROUTER and Access Point

STEP 4: Configure Local Area Network(LAN) Settings

- The LAN is deactivated by default. To activate it securely follow the steps outlined below.
- Click on *START MENU*.
- TYPE *cmd* to enter the DOS.
- Type *ipconfig /release*
 - Then wait
- On the *Graphical Interface*
 - Click on NETWORK – Network and Sharing Center – Change adapter setting – Right Click - Local Area Connection(LAC) – Click on Disable then Enable.
- Type *ipconfig /renew*
 - Then wait again for the new **IP ADDRESS**.



```
Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Owner>ipconfig /release

Windows IP Configuration

Ethernet adapter Wireless Network Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . : 

C:\Documents and Settings\Owner>ipconfig /renew

Windows IP Configuration

Ethernet adapter Wireless Network Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 172.16.31.33
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 172.16.31.254

C:\Documents and Settings\Owner>
```

The first command clears any "leftover" IP.

The second command finds the local wireless network and reconnects.

Configuration ROUTER and Access Point

STEP 5: Configure Local Area Network(LAN) Settings

- The MAC ADDRESS
- On the DHCP Table
- Highlight then COPY and PASTE the MAC ADDRESS
- Click **SAVE** to save the new LAN settings.

NOTE: For the Documentation write down all the IP ADDRESS you change and especially the new IP ADDRESS.

- Repeat this to:
 - COMPUTER 2
 - ACCESS POINT

DHCP Table

Hostname	IP Address	MAC Address	Status	Expire Time
	192.168.1.8	<div>Manual Config</div>	Static	
tplink31047	192.168.1.10	Manual Config	Static	N/A
	192.168.1.2	00:19:66:86:C5:84	Static	N/A
android_b40ecff71691e1c	192.168.1.3	9C:CA:D9:A5:EF:4B	Auto	2days, 22:58:25
	192.168.1.4	00:12:FE:E0:64:9B	Auto	89days, 23:52:43
Android_866150001747985	192.168.1.5	FC:25:3F:25:59:A5	Auto	2days, 22:2:43
android_878d6b7f1ee93db5	192.168.1.6	D8:B3:77:97:8D:DB	Auto	2days, 22:59:18
android-1cdc101015b1177a	192.168.1.7	00:24:23:7B:E8:D3	Auto	2days, 23:12:44
	192.168.1.101	C4:6A:B7:85:09:83	Auto	89days, 21:50:33
		FC:25:3F:25:59:A5		

DNS

DNS Relay : Use Auto Discovered DNS Server Only

Primary DNS Server : N/A

Secondary DNS Server : N/A

SAVE

CANCEL

Copy the MAC ADDRESS then PASTE

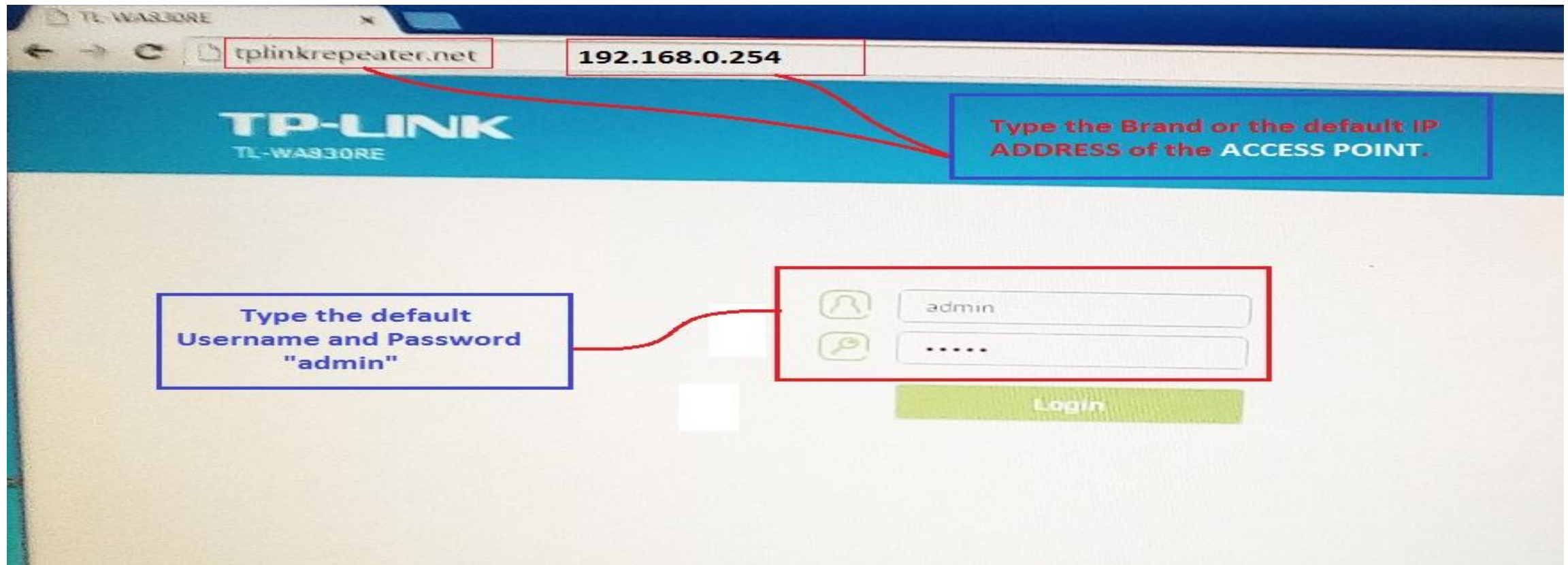
Configuration ROUTER and Access Point

Note:

- ✓ Reset the device into Factory Setting by pressing the "Factory reset" button in 5 to 10sec.
 - the indicator is when the lights(LED) are flash all together or "Turn On" the device is ready or reset.
- ✓ Before the resetting **ACCESS POINT** make sure the ROUTER is disconnected and TURN OFF.

STEP 1: Log into the ACCESS POINT (AP) from your computer

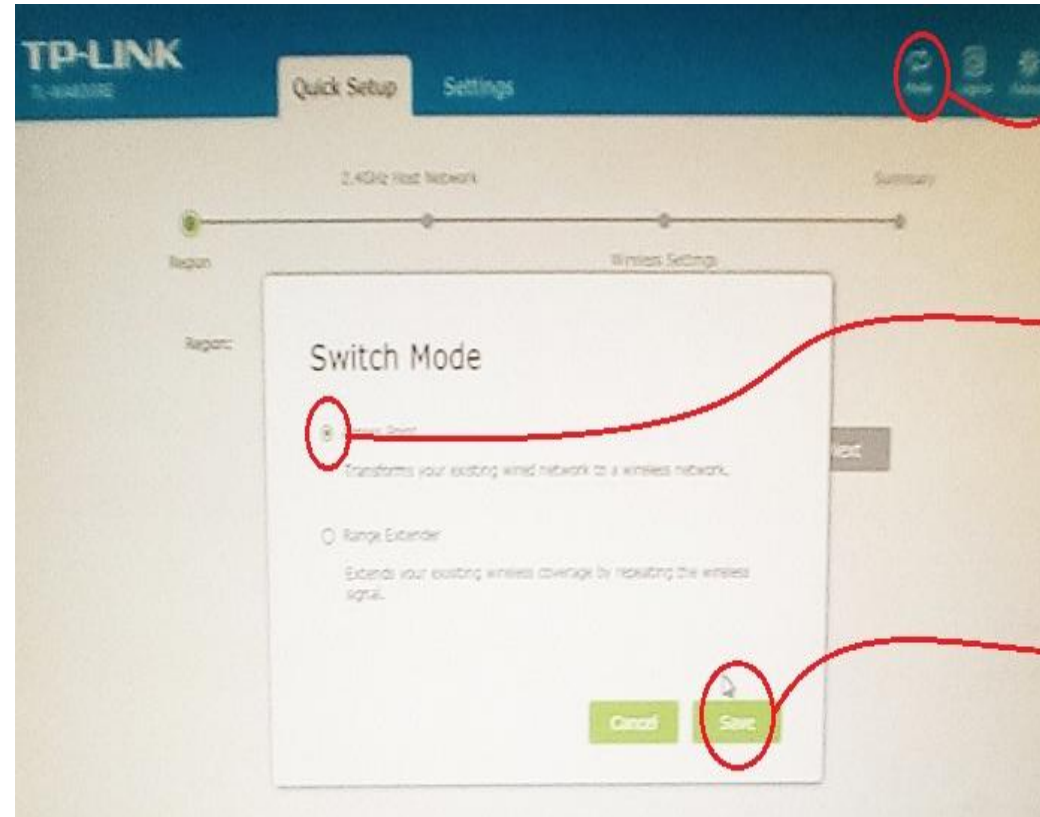
- You will need to have a working network card or port with a computer attached in order to connect to the ACCESS POINT. These instructions assume the default AP setup. This guide assumes that you have set up all the physical connections as per the welcome note, found inside the router's box or at the back of device.
- Open a browser (Internet Explorer, Mozilla Firefox , Google Chrome etc.) and type the brand of the router e.g. http:// tpLINKmodem or type http://192.168.0.254 in the address bar



Configuration ROUTER and Access Point

Step 2:

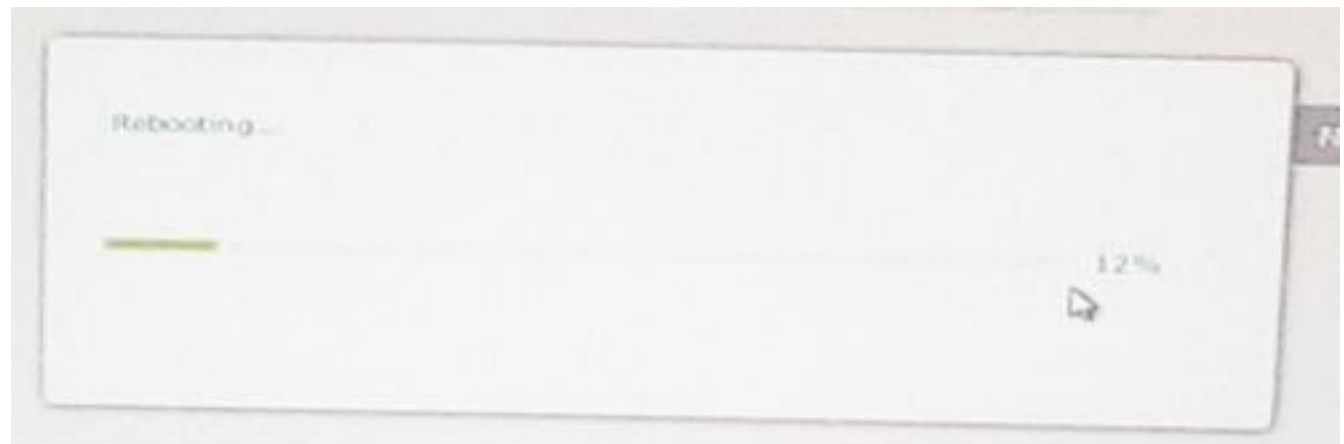
- Click on Mode Button
- On switch mode, click on Access Point button.
- Click SAVE to save and to continue then wait for reboot.



First
Select 'MODE' button

Second
Click on 'Access Point'

Third
Click 'SAVE' to
continue and reboot
then wait.



Configuration ROUTER and Access Point

Step 3:

- Click on Settings
- next click on wireless settings
- Enter a new device name then add a "_AP" at the end of chosen name to easy determine.
- Go to dropdown arrow then choose "WPA/WPA2"
- Choose simple Password
- Save

The screenshot shows the TP-Link TL-WA830RE router's configuration interface. The 'Settings' tab is selected at the top. In the left sidebar, 'Wireless Settings' is highlighted. The main area displays the 'Wireless' configuration page. Red lines and boxes connect specific settings to numbered instructions on the right:

1. Click on 'Settings' (points to the 'Settings' tab at the top)
2. Click on 'Wireless Settings' (points to the 'Wireless Settings' link in the left sidebar)
3. Choose a name that you will recognise then add '_AP' at the end. (points to the 'Network Name (SSID)' field containing 'PRACTICE_AP')
4. Choose 'WPA/WPA2' (points to the 'Security' dropdown menu showing 'WPA/WPA2 - Personal (Recommended)')
5. Choose a Password (points to the 'Password' field containing '12345678')
6. Click 'SAVE' to save the new Wireless Settings. (points to the green 'Save' button at the bottom right)

Configuration ROUTER and Access Point

The screenshot displays the configuration interface of a router, divided into two main sections: Network Settings and DHCP Server Settings.

Network Settings:

- Obtain an IP address automatically:** ☐
- Use the following IP address:** ☒
- IP Address:** 192.168.20.123
- Subnet Mask:** 255.255.255.0
- Default Gateway:** 192.168.20.1
- Save:** A green button to save the network settings.

DHCP Server Settings:

- DHCP Server:** ☐ Auto ☐ On ☒ Off
- IP Address Pool:** 192.168.20.100 - 192.168.20.199
- Address Lease Time:** 1 minutes (1 default; 2880 maximum)
- Default Gateway:** 192.168.20.123 (Optional)
- Primary DNS:** 0.0.0.0 (Optional)
- Secondary DNS:** 0.0.0.0 (Optional)
- Save:** A green button to save the DHCP server settings.

1. Select 'Network Settings'

2. Change the 3rd digit of the IP ADDRESS of AP (Same at Router) e.g. (192.168.__.101)

3. Enter or type the Router IP Address you've done.

4. On the DHCP Server Settings, set in 'OFF' settings the DHCP Server.

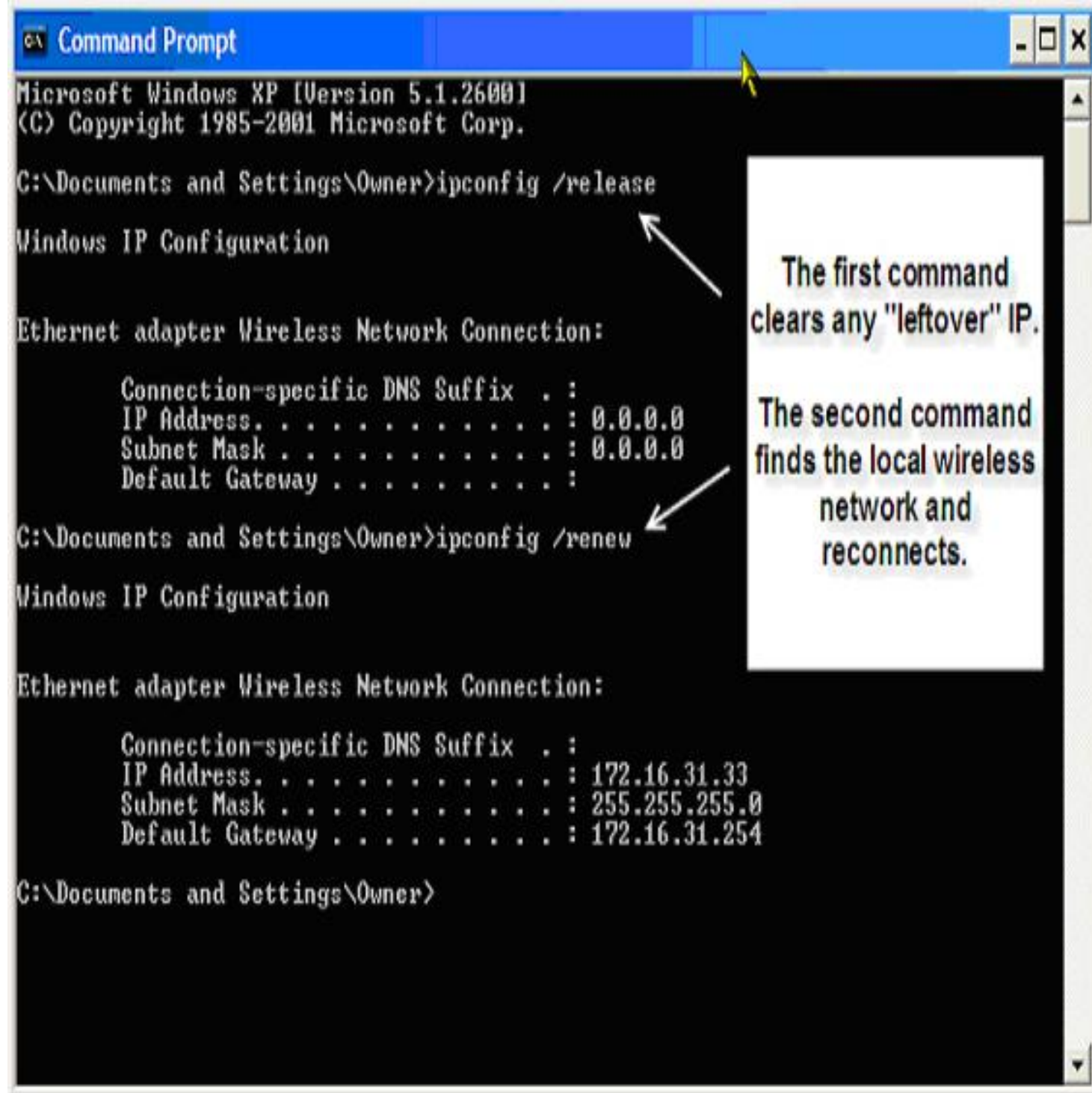
5. Save first the DHCP Server before you save the Network Settings.

6. Click 'SAVE' to save the new Network Settings.

Configuration ROUTER and Access Point

STEP 5: Configure Local Area Network(LAN) Settings

- The LAN is deactivated by default. To activate it securely follow the steps outlined below.
- Click on *START MENU*.
- TYPE *cmd* to enter the DOS.
- Type *ipconfig /release*
 - Then wait
- On the *Graphical Interface*
 - Click on NETWORK – Network and Sharing Center – Change adapter setting – Right Click - Local Area Connection(LAC) – Click on Disable then Enable.
- Type *ipconfig /renew*
 - Then wait again for the new **IP ADDRESS**.



```
Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Owner>ipconfig /release

Windows IP Configuration

Ethernet adapter Wireless Network Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . : 

C:\Documents and Settings\Owner>ipconfig /renew

Windows IP Configuration

Ethernet adapter Wireless Network Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 172.16.31.33
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 172.16.31.254

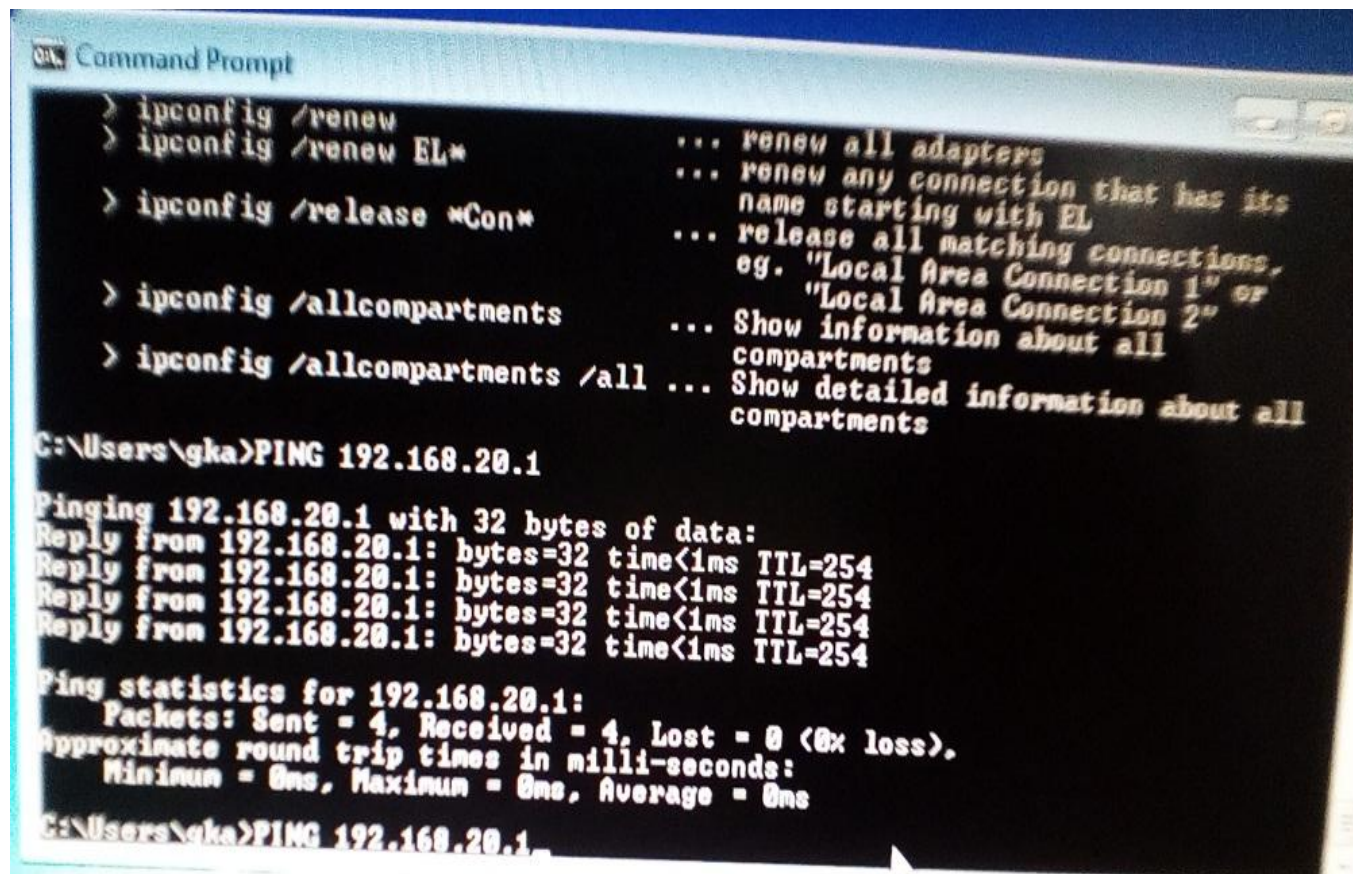
C:\Documents and Settings\Owner>
```

The first command clears any "leftover" IP.

The second command finds the local wireless network and reconnects.

Configuration ROUTER and Access Point

THEN CONNECT all cable (*Cross-Over Cable*) into access point and router to the Switch Hub, then access them synchronized on the browser and at the DOS, type **ping** (then enter *the IP Address of Router and Access Point*) must connected to each other. LASTLY Access them both to the browser.



```
Command Prompt
> ipconfig /renew
> ipconfig /renew EL*
> ipconfig /release *Con*
> ipconfig /allcompartments
> ipconfig /allcompartments /all

C:\Users\gka>PING 192.168.20.1

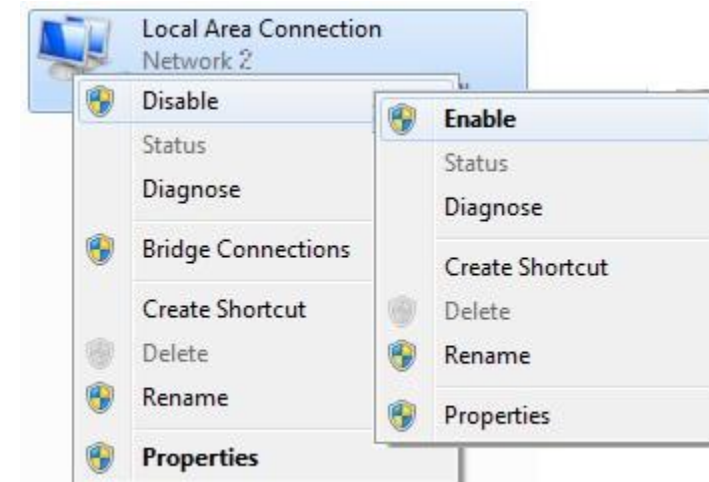
Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time<1ms TTL=254
Reply from 192.168.20.1: bytes=32 time<1ms TTL=254
Reply from 192.168.20.1: bytes=32 time<1ms TTL=254
Reply from 192.168.20.1: bytes=32 time<1ms TTL=254

Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\gka>PING 192.168.20.1
```

On the *Graphical Interface*

Click on NETWORK – Network and Sharing Center – Change adapter setting – Right Click - Local Area Connection(LAC) – Click on Disable then Enable.



Configuration ROUTER and Access Point

Connect the LAPTOP on the
ACCESS POINT



NOTE: Check all MAC Address,
must in **STATIC** mode.

At the **CENTRAL DEVICE** or **SERVER**

Go to Command Prompt

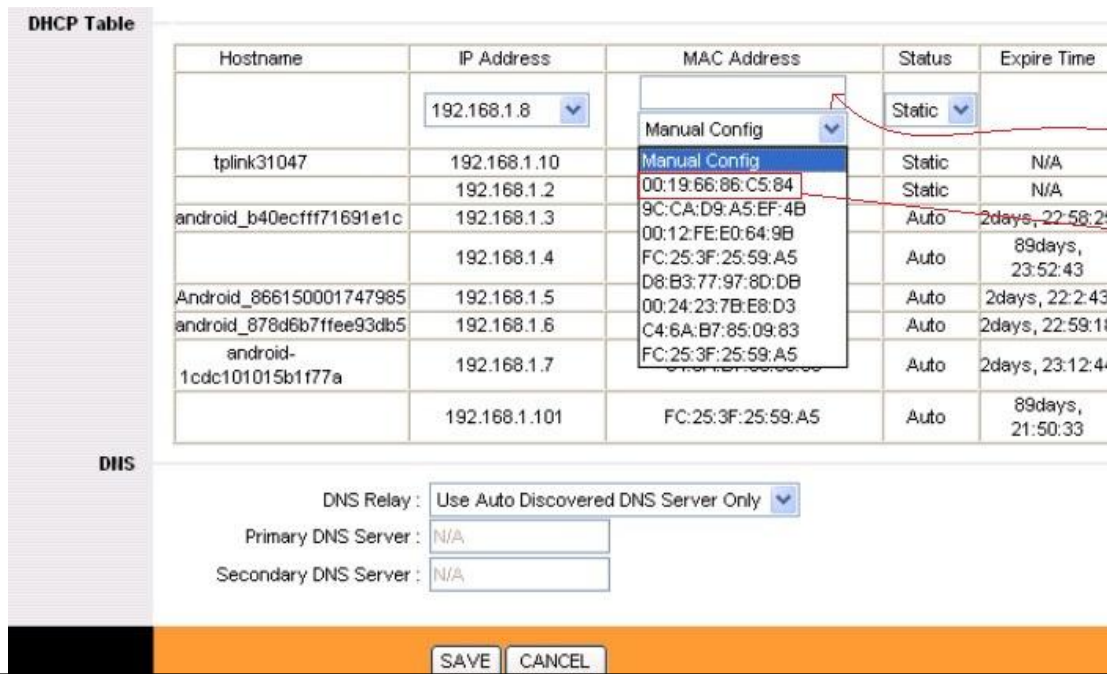
- Type CMD
- Type getmac

Look for the MAC ADDRESS of all device and follow the procedure below.

- The MAC ADDRESS
- On the DHCP Table
- Highlight then COPY and PASTE the MAC ADDRESS
- Click **SAVE** to save the new LAN settings.

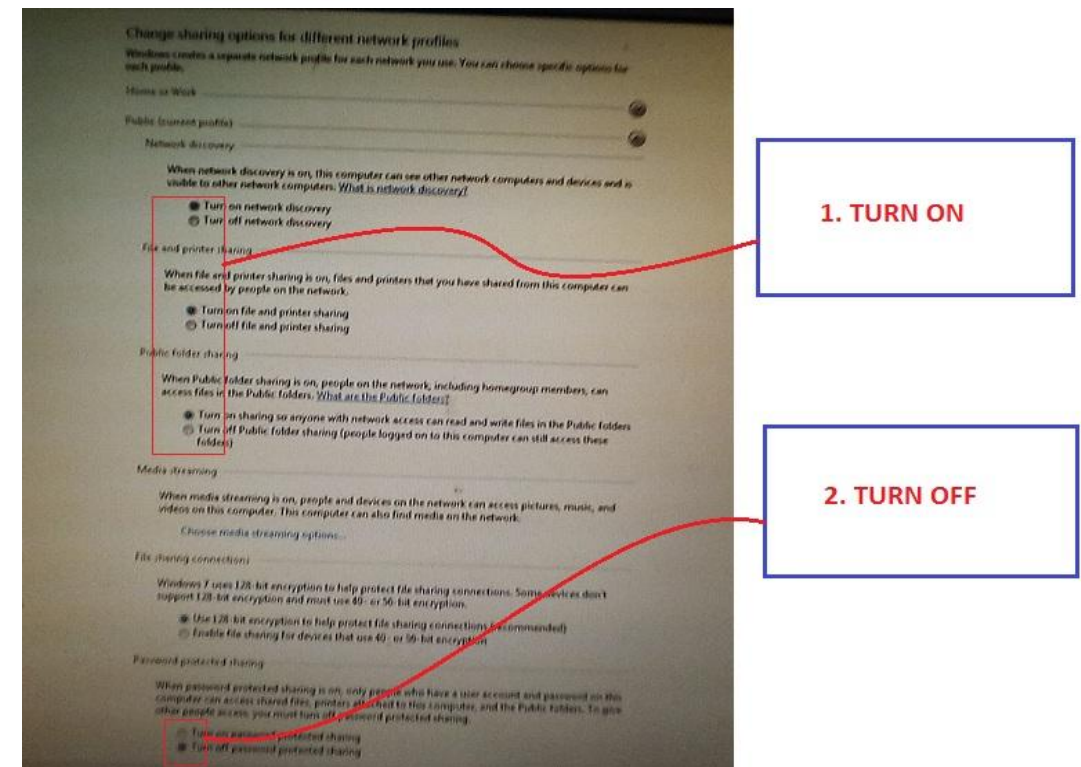
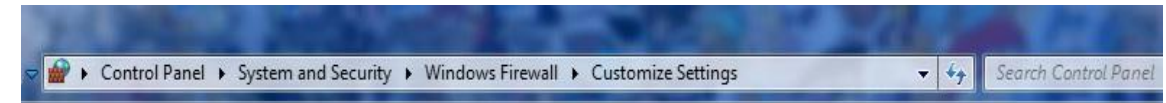
NOTE: For the Documentation write down all the IP ADDRESS you change and especially the new IP ADDRESS.

- Repeat this to:
 - COMPUTER (SERVER, CLIENT_PC and CLIENT_LAPTOP)
 - ACCESS POINT



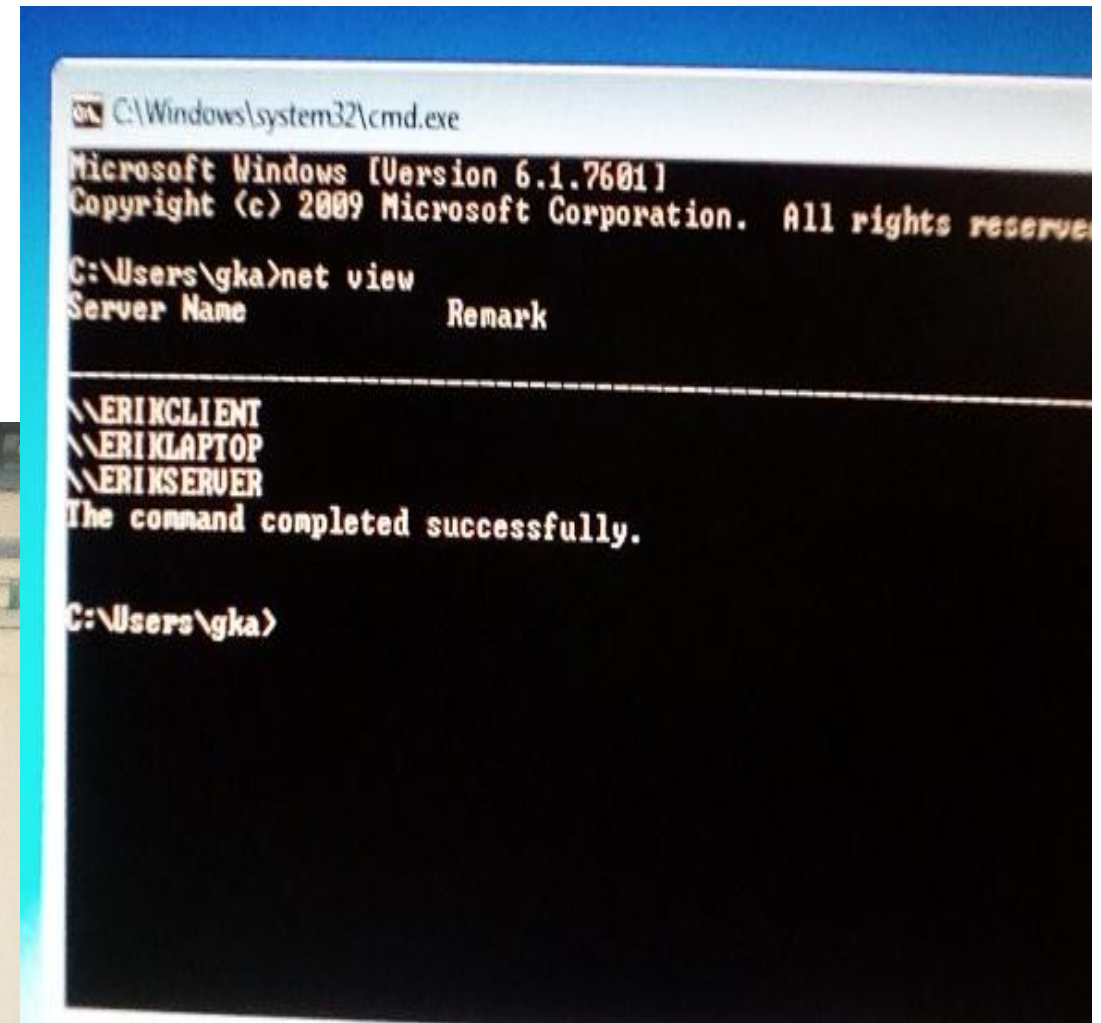
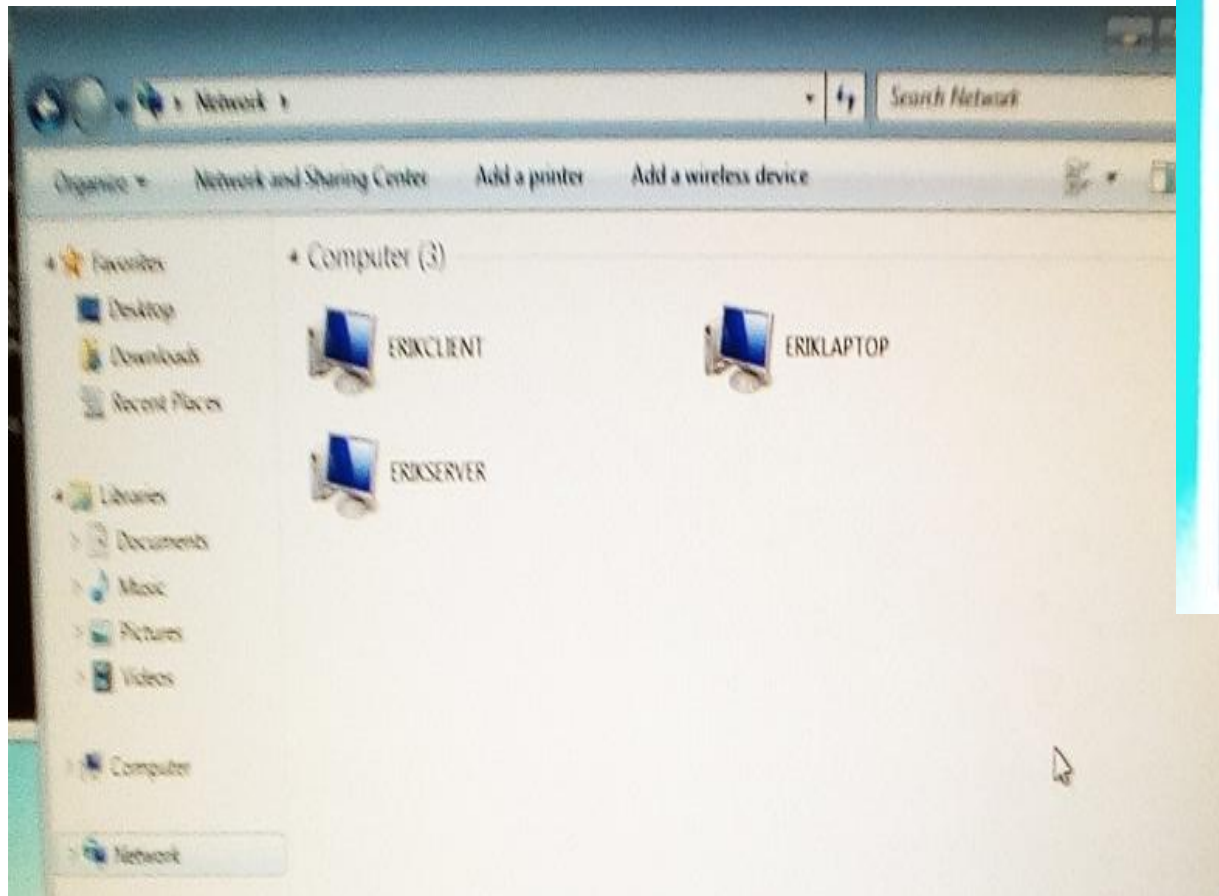
CONNECT ALL DEVICE (SERVER, CLIENT_PC & CLIENT_LAPTOP)

- See all in one Network:
 - Look for the “**UNIQUE**” IP ADDRESS (192.168.__.__)
 - Look for Default Gateway “**SAME**”
 - Look for Computer Name “**UNIQUE**”
 - Look for Workgroup Name “**SAME**”
- See all Firewall:
 - Set all firewall into “**OFF MODE**”
- See all Sharing Option:
Steps:
 - ✓ Network – Network and Sharing Center – Advance Sharing Settings – Network Discovery
 - ☐ Network Discovery - **Turn ON**
 - ☐ File Sharing - **Turn ON**
 - ☐ For the Password - **Turn OFF**



CONNECT ALL DEVICE (SERVER, CLIENT_PC & CLIENT_LAPTOP)

- To view all and check if all are connected:
 - ✓ CMD – Type ***net view*** – look for the three device.
 - ✓ ***Graphical*** – look for the three device.



CONNECT ALL DEVICE (SERVER, CLIENT_PC & CLIENT_LAPTOP)

File Sharing (Peer – to – peer)

Note:

SERVER =
can share/send

=
can delete
CLIENT = read/view only

Folder – Properties –
Sharing – Share (Advance
Setting – Permission)

The screenshot shows the 'SAMPLE Properties' dialog box with the 'Sharing' tab selected. The 'Advanced Sharing' section is expanded, showing 'Share this folder' checked and 'Share name' set to 'SAMPLE'. The 'Permissions' button is highlighted. The 'Permissions for SAMPLE' dialog box is open, showing 'Everyone' as the group with 'Full Control' selected under 'Allow'. The 'OK' button is highlighted.

1. Create Folder

2. Right click the folder then select 'Properties'

3. Select 'Sharing'

4. Share this folder

5. Advanced Sharing

6. Permissions

7. Permission to everyone
- if CLIENT = Select all (Full Control, Change & read)
- if SERVER = Select only "READ"

8. Apply & OK all

CONNECT ALL DEVICE (SERVER, CLIENT_PC & CLIENT_LAPTOP)

File Sharing (Peer – to – peer)

Note:

SERVER =
can share/send

=
can delete
CLIENT = read/view only

Folder – Properties –
Sharing – Share (Advance
Setting – Permission)

The image shows a sequence of three overlapping Windows XP-style windows illustrating the steps to share a folder. The top window is the 'SAMPLE Properties' dialog, with the 'Sharing' tab selected. The 'Share...' button is circled in red. The middle window is the 'File Sharing' dialog, titled 'Choose people to share with'. It shows a list of users with 'Everyone' selected and circled in red. The bottom window is another 'File Sharing' dialog, showing the 'Permission Level' for 'Everyone' set to 'Read/Write', which is also circled in red. The 'Share' button at the bottom of this window is circled in red. Red lines connect the numbered callouts to these specific elements.

4.1 Click on Drop down Arrow

4.2 Select 'Everyone'

4.3 Click on 'ADD'

4.4 Select =

4.5 Then Select 'Share'

4. select 'Share'

= if SERVER
select 'READ/WRITE'
= if CLIENT
select 'READ'