

ADSL ROUTERS

INTRODUCTION:

What is ADSL?

Asymmetric Digital Subscriber Line (ADSL) is an access technology that utilizes ordinary copper telephone to enable high speed digital data transmission and interactive multimedia application for business and residential customer.

ADSL greatly increases the signal carrying capacity of copper telephone lines without interfering with regular telephone service. For ADSL, this means faster downloads and more reliable connectivity. An ADSL device makes it possible to enjoy benefits such as high speed internet access without experiencing any loss of quality or disruption of voice capability.

ADSL provides the dedicated service over a single phone line operating speed of up to 8Mbps downstream and up to 640 Kbps upstream, depending on local telephone line conditions, a secure point to point connection is established between the user and central office of the service provider.

Basic Concept of ADSL:

ADSL is a common technology for Internet access. Basic function of an ADSL modem is to provide Ethernet connectivity over telephone wire so that a PC at customer site and the system at service provider site can exchange data. In order to validate the user, a protocol, such as PPPoE (sometime using PPPoA or PPTP), is used for authentication. The PPPoE client software is running on a PC or an access router at the customer site. PPPoE account name and password are obtained from the service provider. Once authentication is completed, the local network at the customer site will be granted with a public IP address.

Nowadays, ADSL modem and a small access router are built into one device. Such integrated access device (ADSL router) provides multiple functions:

ADSL modem that allows data frames to be carried over telephone wire; Access router that performs PPPoE or PPPoA function, IP routing function, DHCP service, network address translation, and maybe simple firewall function.

LAN switch that has multiple Ethernet ports allowing multiple PC behind the router to share the Internet access.

The same functions of all SOHO wireless routers

TP-LINK®
The Reliable Choice

There is one thing we should be aware of, which is:

No matter how many wireless routers there are, they are still wireless routers and they do what wireless routers do.

So, the question is what wireless routers do. Firstly, let's review how we go to Internet if we don't have a wireless router.

1: The network topology is like this:

Internet ----- modem ----- PC

2: Then we dial up on our PC like:

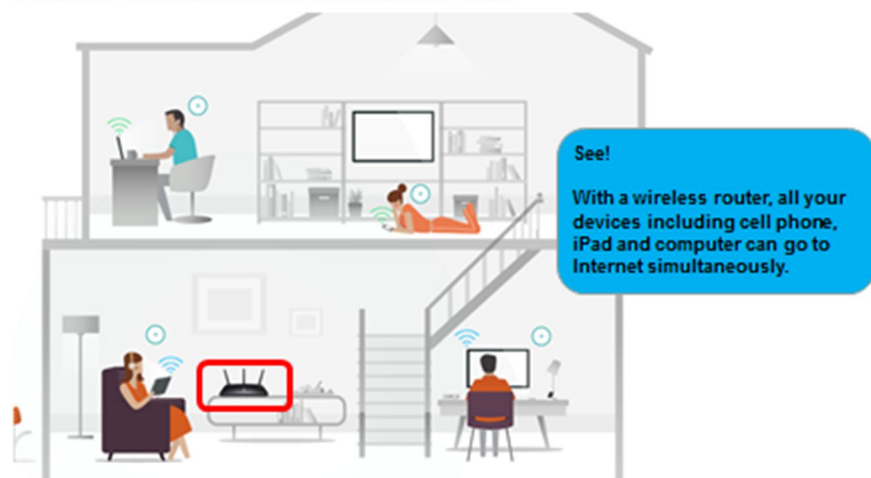


3: At last, our PC will obtain a **public IP address** from ISP, and we can go to Internet.



Now we know how to go to Internet without a wireless router. Without a wireless router, only one PC can go to Internet **as we need to dial up on the computer**. In other words, if we want other devices can go to Internet too, we need a wireless router.

That is what wireless routers do.



SOHO wireless routers overview

Can we use all these kinds of transmission medium to go to Internet?

The answer is Yes.



Power line



Telephone line



Coaxial cable



Ethernet cable



Optical fiber

Now we should know how many kinds of broadband access there are.

If we use power line to go to Internet, we call it as **BPL** which is short for broadband over power line.

If we use telephone line to go to Internet, we call it as **xDSL** which includes ADSL, ADSL2, ADSL2+, VDSL, VDSL2 and so on.

If we use coaxial cable to go to Internet, we call it as **HFC** which is short for hybrid fiber-coaxial.

If we use Ethernet cable to go to Internet, we call it as **Ethernet access**.

If we use optical fiber to go to Internet, we call it as **PON** which includes EPON, GPON and so on.

So the most important and most basic function of wireless routers is sharing Internet access.

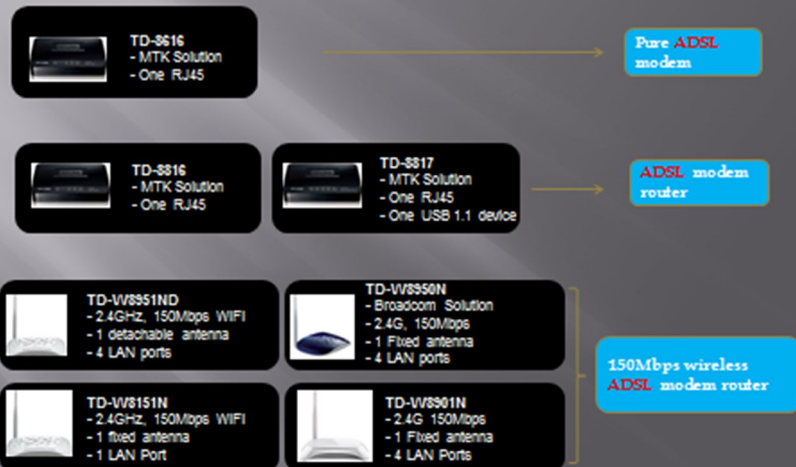
To achieve this goal, wireless routers can do and will do these things:

- 1: They offer wireless and wired connections.
- 2: They have DHCP functions.
- 3: They have dial up functions.
- 4: They have NAT functions.

All these functions will work together to achieve the goal that multiple devices can go to Internet simultaneously.

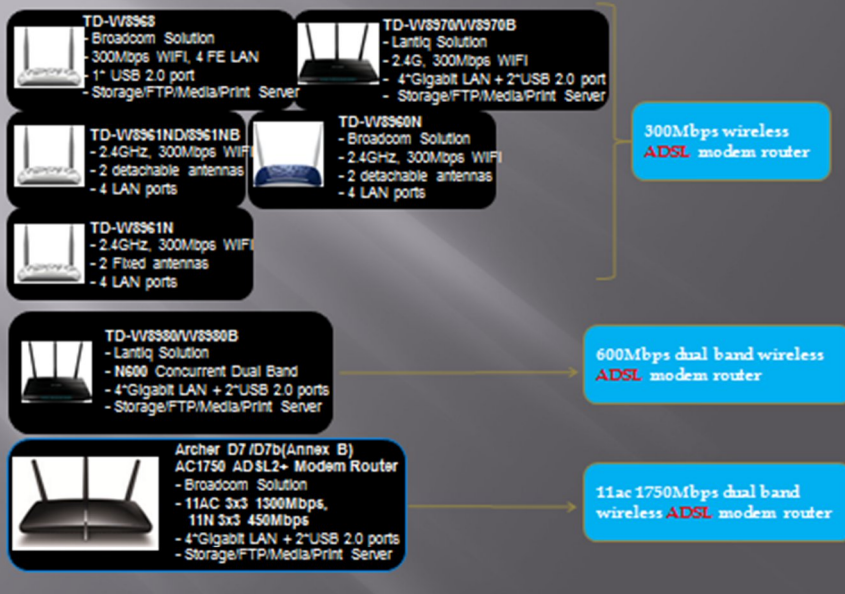
Now let's learn these functions one by one.

As we always did, let's first check all xDSL products we have.



The same functions of all SOHO wireless routers

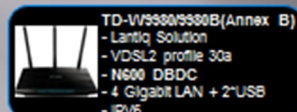
TP-LINK®
The Reliable Choice



The same functions of all SOHO wireless routers

TP-LINK®
The Reliable Choice

So many xDSL products, but not finished. All the products we have seen before are **ADSL** products. Now there is one more **VDSL** product.

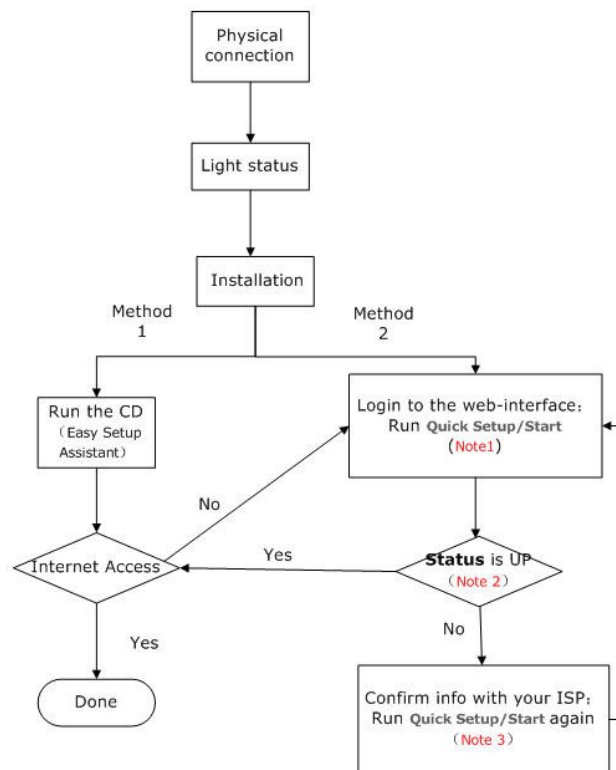


600Mbps dual band wireless VDSL modem router

Actually you can learn these xDSL products by comparing them with SOHO wireless routers. You will find it is very easy. It seems like every SOHO wireless router has its corresponding xDSL product.

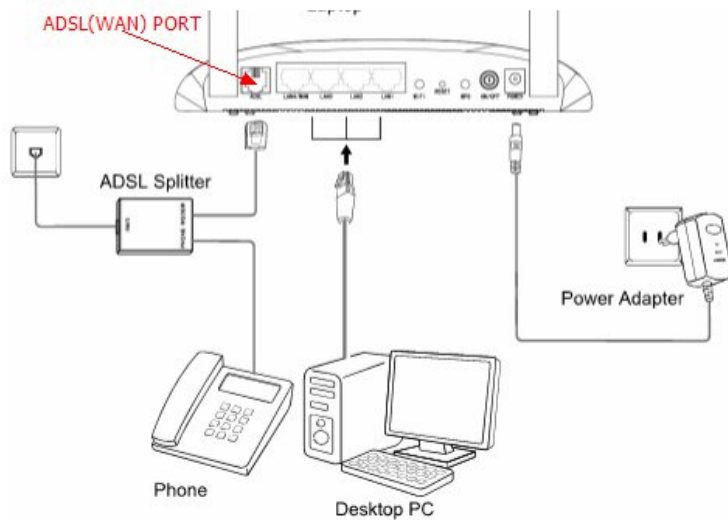
	11ac	Dual band 600Mbps	300Mbps	150Mbps	No wireless function	No router function
SOHO wireless routers	Archer C7	TL-WDR3600	TL-WR841N	TL-WR741ND	N/A	N/A
xDSL products	Archer D7	TD-W9980	TD-W8970	TD-W8951ND	TD-S817	TD-S616

PHYSICAL CONNECTION:



ADSL LIGHT NOT BLINKING.

- CHECK THE ROUTER IS CONNECTED DIRECTLY OR WITH SPLITTER.
- CHECK THAT THERE SHOULD NOT BE ANY DAMAGED ON CABLE.
- CHECK THE ADSL LINE STATUS FROM SERVICE PROVIDER.
- CHECK LANDLINE PHONE IS WORKING IF PROVIDED BY INTERNET PROVIDER.
- CHECK LOGIN IN DEVICE AND CHECK ADSL OTHER OPTION AS (G.DMT).
- CHECK THE DISTANCE FROM EXCHANGE OF INTERNET PROVIDER.



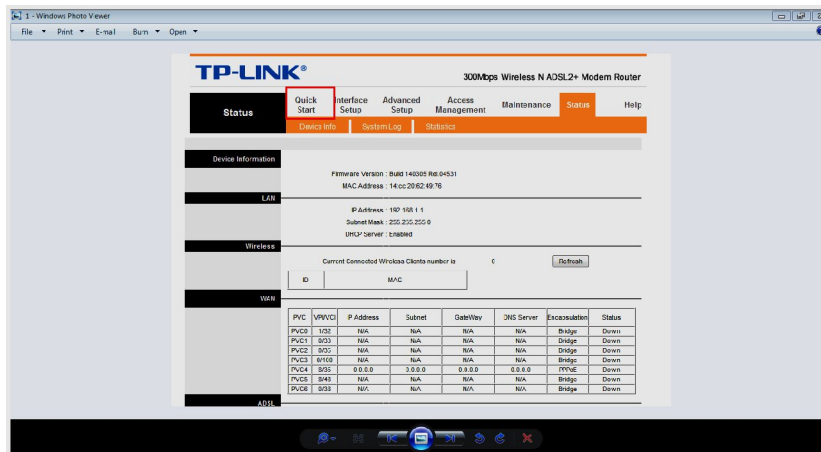
[ADSL Modem Configuration Manual .](#)

SUITABLE TP-LINK MODEM-ROUTERS- TD-W8901N, TD-W8151N,TD-W8951ND,TD-W8961ND.

Connect the Modem as specified in the image below.

- 1) Open a Browser in the system connected to the modem.
- 2) Type 192.168.1.1 in the address bar and Enter.
- 3) You would prompted for a Login username and password.
- 4) Enter 'admin' as both username and password.

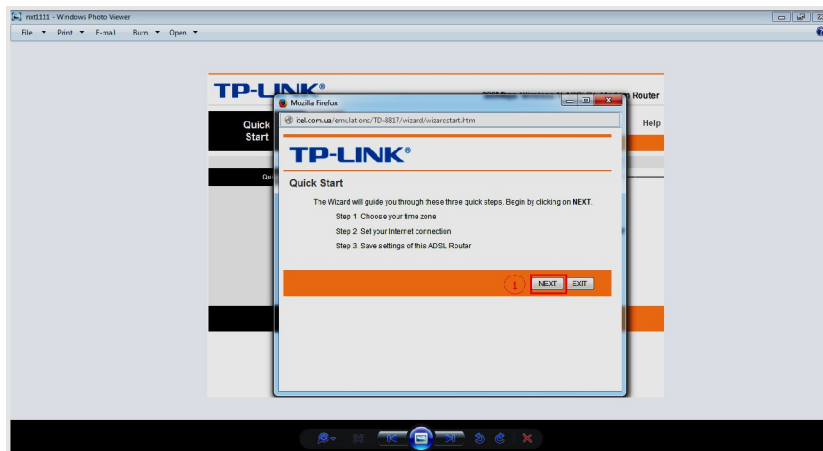
This will take you to modem configuration page.



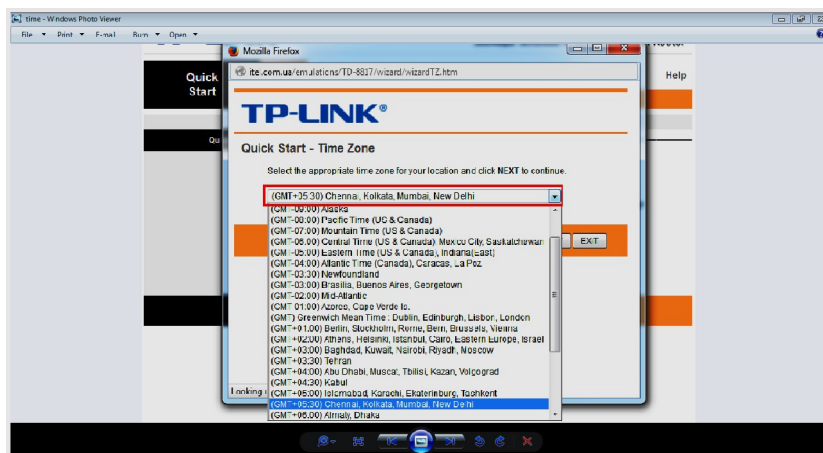
- 1) Click QUICK START.



Click RUN WIZARD.



Click NEXT.

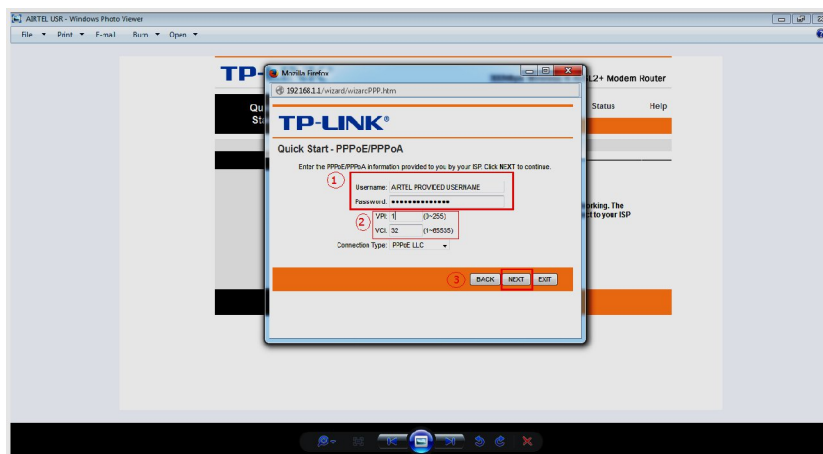


Set the INDIAN Time zone as displayed below.

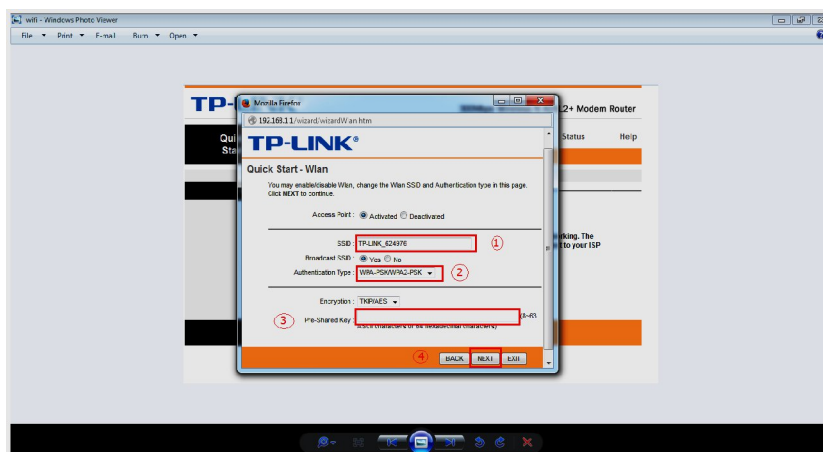
(GMT+05:30) Chennai, Kolkata, Mumbai, New Delhi



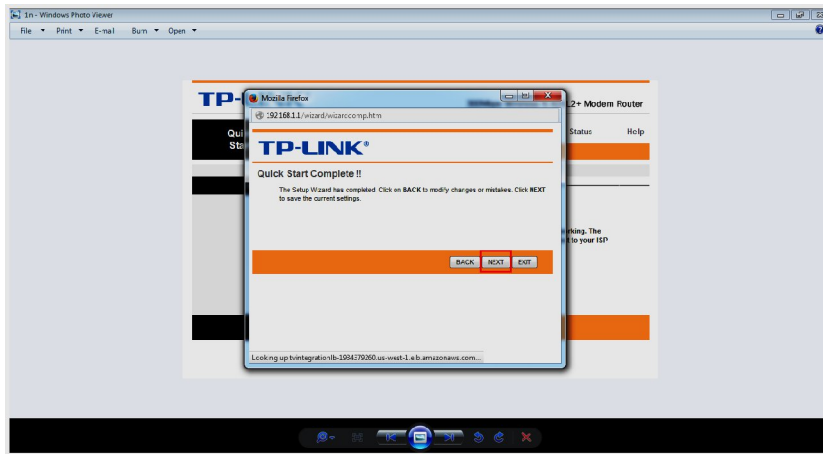
- 1) Set the Connection Type as PPPoE/PPPoA.
- 2) Click NEXT.



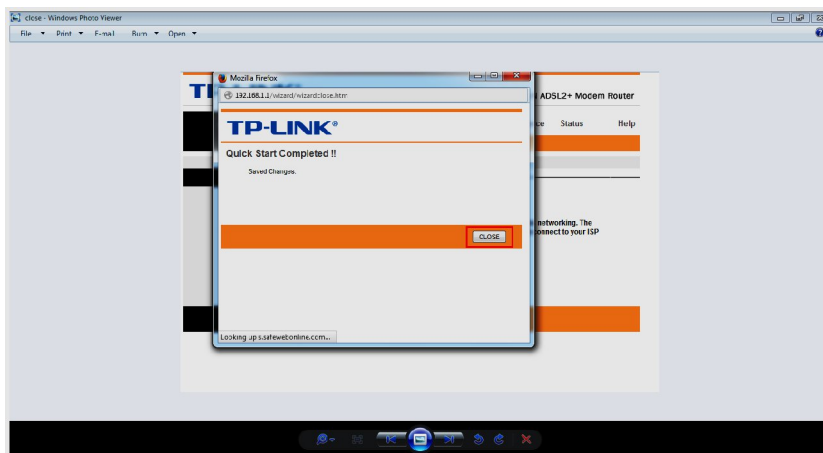
- 1) Set the Username and password provided by AIRTEL.
- 2) Set the below values as :
VPI -- 1
VCI -- 32.
- 3) Click NEXT



- 1) Set a Wireless Network Name of your choice.
- 2) Select the Authentication type from the Drop Down list, Recommended is WPA-PSK/WPA2-PSK
- 3) In the Pre Shared Key option Set a Wireless Security Password of your choice.
- 4) Click NEXT.



Click NEXT.



Click CLOSE.

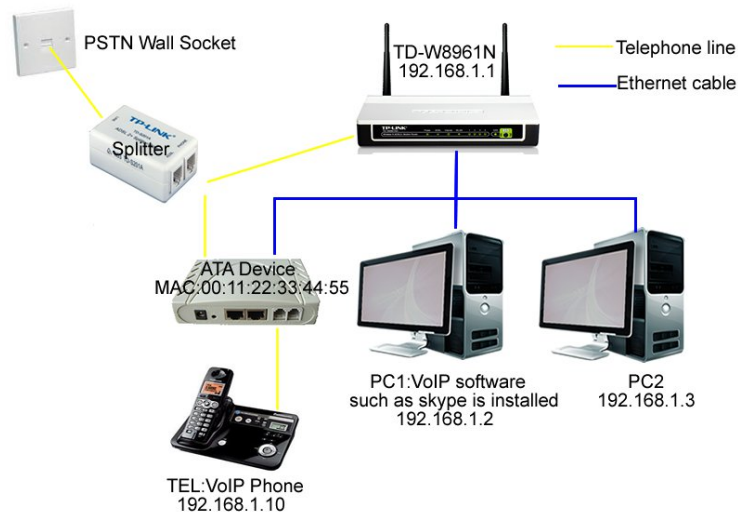
This completes the Modem Configuration to provide Internet access.

How to set TD-W8961ND QoS for ,IGMP,Online Game or RTSPSuitable for:TD-W8961ND,TD-W8951N,TD-W8901G,TD-8816,TD-8817,TC Modem

Please make sure internet is OK first, and then configure QoS as below

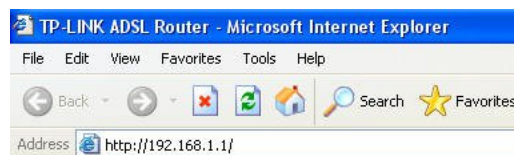
1. QoS for VoIP

Here is a typical topology for a small home network, please follow the steps to make the **voice data** have the **highest priority** for the whole network.



Configuration for QoS:

Step 1. Open your browser and enter **192.168.1.1** in your address bar, then press **"Enter"**.



Step 2. Enter the username and password of your modem. By default it will be Username: **"admin"** and Password: **"admin"** or if you have changed this, please enter the new username and password.



Step 3. Click on **"Advanced Setup"** on the top menu and click on **"QoS"**,

Set following parameters as below:

Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status
Firewall	Routing	NAT	QoS	VLAN	ADSL

QoS: ☒ Activated ☐ Deactivated

Summary: [QoS Settings Summary](#)

Rule Index: 1

Active: ☒ Activated ☐ Deactivated

Application:

Physical Ports: ☒ WLAN ☒ Enet1 ☒ Enet2 ☒ Enet3 ☒ Enet4

Destination MAC:

IP:

Mask:

Port Range: 5060 ~ 5061

Source MAC:

IP:

Mask:

Port Range: ~

Protocol ID: UDP

Vlan ID Range: ~

IPP/DS Field: ☐ IPP/TOS ☒ DSCP

IP Precedence Range: ~

Type of Service:

DSCP Range: 0 ~ 63 (Value Range: 0 ~ 63)

802.1p: ~

IPP/DS Field: ☐ IPP/TOS ☒ DSCP

IP Precedence Remarking:

Type of Service Remarking:

DSCP Remarking: 63 (Value Range: 0 ~ 63)

802.1p Remarking:

Queue #: Highest

[ADD](#) [DELETE](#) [CANCEL](#)

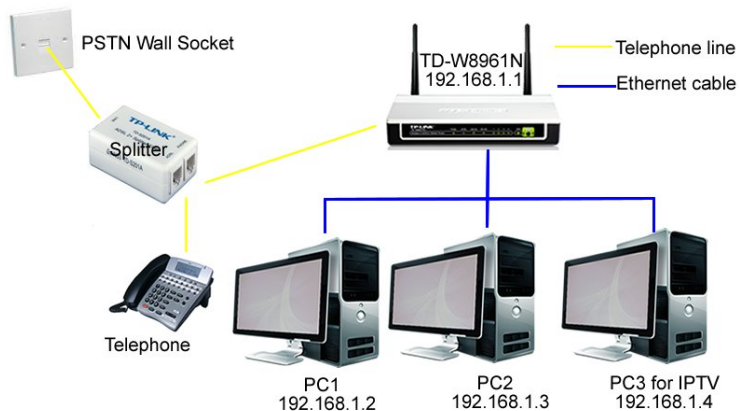
Note: If QoS is applied in some single computer, please set the source IP Address with Subnet Mask or Source MAC address in the rule.

At last click **add** button to finish adding the rule.

Now you can test VoIP QoS with the settings.

2. QoS for IGMP/IPTV

Suppose the topology is as following, please follow the steps to make **IGMP/IPTV data** have the **highest priority** for the whole network.



Configuration for QoS:

The **step 1 to step 2 are the same** as the QoS for VoIP. After above step 1 to step 2, please go to **step 3**:

Step 3: Click on **"Advanced Setup"** on the top menu and click on **"QoS"**,

Set following parameters as below:

The screenshot shows the QoS configuration interface with the **Advanced Setup** tab selected. The **QoS** sub-tab is also active. The configuration is for **Rule Index 1**. The **QoS** status is **Activated**. The **Active** status is also **Activated**. The **Application** is set to **IGMP**. The **Physical Ports** are **WLAN**, **Enet1**, **Enet2**, **Enet3**, and **Enet4**. The **Destination MAC** is **224.0.0.0** with a **Mask** of **240.0.0.0**. The **Port Range** is **0 ~ 63**. The **Source MAC** is **0 ~ 63**. The **Protocol ID** is **IGMP**. The **Vlan ID Range** is **0 ~ 63**. The **IPP/DS Field** is **DSCP**. The **IP Precedence Range** is **0 ~ 63**. The **Type of Service** is **0 ~ 63**. The **DSCP Range** is **0 ~ 63** (Value Range: 0 ~ 63). The **802.1p** is **0 ~ 63**. The **IPP/DS Field** is **DSCP**. The **IP Precedence Remarking** is **0 ~ 63**. The **Type of Service Remarking** is **0 ~ 63**. The **DSCP Remarking** is **63** (Value Range: 0 ~ 63). The **802.1p Remarking** is **0 ~ 63**. The **Queue #** is **Highest**. The **ADD**, **DELETE**, and **CANCEL** buttons are at the bottom.

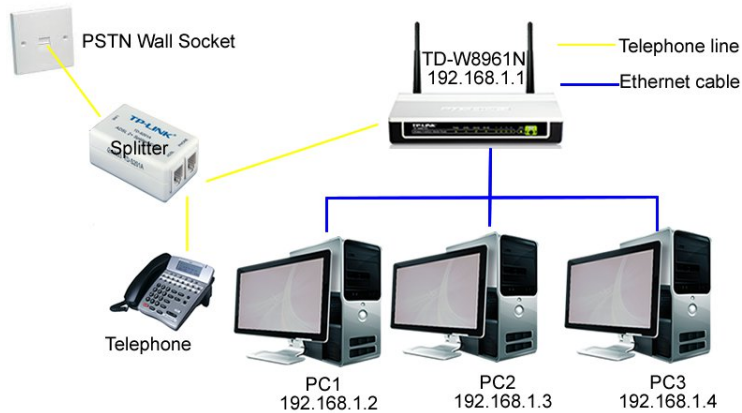
Note: If QoS is applied in some single computer, please set the source IP Address with Subnet Mask or Source MAC address in the rule.

At last click **add** button to finish adding the rule.

Now you can test IGMP QoS with the settings.

3. QoS for Online Game

Suppose the topology is as following, and TCP ports 7200-7300 are used for the game. Please follow the steps to make **game data** have the **highest priority** for the whole network.



Configuration for QoS:

The **step 1 to step 2** are the same as the QoS for VoIP. After above step 1 to step 2, please go to **step 3**:

Step 3: Click on "Advanced Setup" on the top menu and click on "QoS",

Set following parameters as below:

Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status
Firewall	Routing	NAT	QoS	VLAN	ADSL

QoS: ☒ Activated ☐ Deactivated
 Summary: [QoS Settings Summary](#)

Rule Index:

Active: ☒ Activated ☐ Deactivated

Application:

Physical Ports: ☒ WLAN ☒ Enet1 ☒ Enet2 ☒ Enet3 ☒ Enet4

Destination MAC:

IP:

Mask:

Port Range: ~

Source MAC:

IP:

Mask:

Port Range: ~

Protocol ID:

Vlan ID Range: ~

IPP/DS Field: ☐ IPP/TOS ☒ DSCP

IP Precedence Range: ~

Type of Service:

DSCP Range: ~ (Value Range: 0 ~ 63)

802.1p: ~

IPP/DS Field: ☐ IPP/TOS ☒ DSCP

IP Precedence Remarking:

Type of Service Remarking:

DSCP Remarking: (Value Range: 0 ~ 63)

802.1p Remarking: ~

Queue #:

[ADD](#) [DELETE](#) [CANCEL](#)

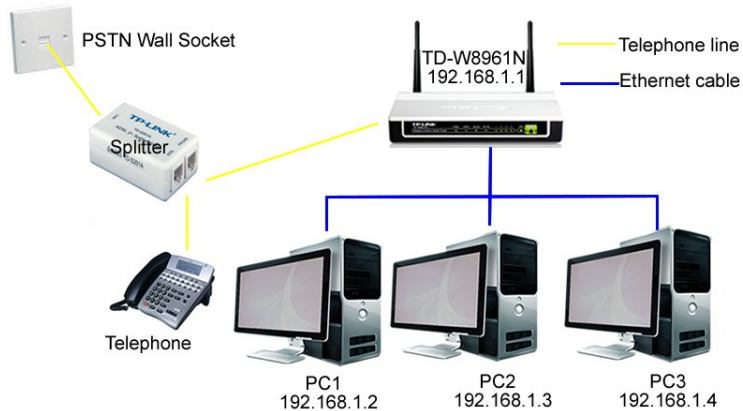
Note: If QoS is applied in some single computer, please set the Source IP Address with Subnet Mask or Source MAC address in the rule.

At last click **add** button to finish adding the rule.

Now you can test Online Game QoS with the settings.

4. QoS for RTSP

Suppose the topology is as following, please follow the steps to make **RTSP data** have the **highest priority** for the whole network.



Configuration for QoS:

The **step 1 to step 2 are the same** as the QoS for VoIP. After above step 1 to step 2, please go to **step 3**:

Step 3: Click on **"Advanced Setup"** on the top menu and click on **"QoS"**,

Set following parameters as below.

Quick Start	Interface Setup	Advanced Setup	Access Management	Maintenance	Status
Firewall	Routing	NAT	QoS	VLAN	ADSL

QoS: ☒ Activated ☐ Deactivated

Summary: [QoS Settings Summary](#)

Rule Index: 1

Active: ☒ Activated ☐ Deactivated

Application:

Physical Ports: ☒ WLAN ☒ Enet1 ☒ Enet2 ☒ Enet3 ☒ Enet4

Destination MAC:

IP:

Mask:

Port Range: 554 ~ 554

Source MAC:

IP:

Mask:

Port Range: ~

Protocol ID: TCP/UDP

Vlan ID Range: ~

IPP/DS Field: ☐ IPP/TOS ☒ DSCP

IP Precedence Range: ~

Type of Service:

DSCP Range: 0 ~ 63 (Value Range: 0 ~ 63)

802.1p: ~

IPP/DS Field : ☐ IPP/TOS ☒ DSCP

IP Precedence Remarking :

Type of Service Remarking :

DSCP Remarking : 63 (Value Range: 0 ~ 63)

802.1p Remarking :

Queue # : Highest

ADD DELETE CANCEL

Note: If QoS is applied in some single computer, please set the Source IP Address with Subnet Mask or Source MAC address in the rule.

At last click **add** button to finish adding the rule.

Now you can test RTSP QoS with the settings.

WIRELESS CONNECTIVITY ISSUE.

- CONFIRM THE MODE OF CONFIGURATION--(PPPOE/DYNAMIC) AS WIRELESS WILL NOT FUNCTION IF ITS ON BRIDGE MODE.
- CHECK THE WIRELESS PASSWORD ENTERED BY CUSTOMER IN SYSTEM OR LAPTOP IS SAME AS IN TP-LINK ROUTER.
- CHECK THE WIRELESS ENCRYPTION, CHANNEL, & CHANNEL WIDTH AS PER DEVICE (ex. DELL WIRELESS 1703 CARD DOES NOT SUPPORT 'AES' INCRYPTION , IT WORKS ONLY ONLY ON TKIP)
- IN CASE OF DISCONNECTION OF WIRELESS CHECK DISABLING WIRELESS SECURITY.
- CHECK THE TYPE OF SECURITY WHILE CONNECTING WIRELESS.
- CHECK WIRELESS ENCRYPTION IN CASE OF WIRELESS ISSUE
- DISABLE THE WPS, IF ISSUE IN WIRELESS DISCONNECTION BECOZ CERTAIN DEVICES DOES NOT CONNECT WHEN WPS IS ON.

CONFIGURATION OF WAN.

- YOU SHOULD HAVE THE USERNAME AAND PASSWORD PROVIDED BY INTERNET SERVICE PROVIDER.
- COLLECT THE INFORMATION ABOUT VPI & VCI VALUE OF INTERNET SERVICE PROVIDER.
- CHECK IF THERE IS ANY SERVICE NAME FROM SERVICE PROVIDER.
- IN FEW CASES INTERNET DOES NOT CONECT OR FEW SITES DOES NOT WORK IN THAT CASE WE CAN REDUCE THE MTU SIZE.

SLOW SPEED ISSUE.

It is usually very easy to determine where the problem lies with speed issues, as there is very little testing that can be done from an end customer's point of view. If you believe that you are experiencing slow speeds while your account is unshaped, please complete the steps below:

- Visit the speed test sites (speedtest.net) and download any program or file with a decent size. This will give you the current working download speed.
- If the download speed is correct when downloading from the Download Vault, your connection is working fine.
- If the connection is not performing at the correct speeds, disconnect all but one computer from the modem/router (this also includes any gaming consoles you have connected to your network). If the download speed increases, then it appears something on the network is using the connection.
- If this is the case, a full virus and spyware scan is recommended (if there is only one computer connected to the internet, run these scans as well).

- Check for download accelerators and peer-to-peer (P2P) programs.
- Try another computer.
- Try another modem if possible, or try this modem on a known working full speed line.

DROP OUT.

Dropouts are a very difficult issue to resolve. If the dropouts seem to be occurring at the same time each day (for example when a monitored alarm system is armed/de-armed) then it is just a case of correcting the filtering (or installing a central splitter in the case for the monitored alarm). Issues such as slow speeds and dropouts are rarely (less than 1% of the time) a problem at our wholesale provider's end. If the dropouts are erratic, try the following:

- Disconnect all devices including phones, faxes, EFTPOS machines, 56kbps modems and answering machines from the line overnight to test. If dropouts stop, issue may be with a faulty filter, telephone device or a device needing a better quality filter.
- When disconnecting the telephone devices from the lines, also disconnect the computers from the modem/router so the only cables connected to it is the phone line and power cable. If the modem/router does not dropout (check usage in My Account) while the computers are disconnected, this usually indicates that something on your internal network is overloading the modem and causing it to "lock up". Run anti-virus and spyware scans on all computers connected in the network.
- Confirm the Broadband phone line is not part of a PABX or Rotary telephone system.
- Ensure there is no filter on the modem.
- Is the modem/router losing line sync?
- Set the modulation to "G.Dmt" in the router.
- Test a new telephone cable (less than 5 meters). Also try another telephone socket in the premises.
- Test another modem on your telephone line, or test your modem on an active ADSL telephone line that is known to be working.
- Listen for any audible static on the line with the Broadband modem switched off, as this can interfere with the ADSL service.
- Ensure there is no monitored alarm system on the line.
- Check for air conditioners, heaters, fluorescent/low electric light bulbs, television sets, RF radios, microwaves, devices with large motors (such as washing machines), and so on. If the connection drops when these are on (or turned on/off) they are most likely interfering.
- If line sync is not dropping but the connection is, check that the modem doesn't have an idle timeout set.

Few more Troubleshooting steps for your ADSL Router/Modem Setup

Cannot open configuration screen:

- Power down your equipment for 30 seconds, then retry.

- Disable your firewall software.
- Ensure your Web browser is not configured to use a proxy server.

Line/Internet/ADSL light flashing or off:

- Power down your equipment for 30 seconds, then retry.

No lights:

- Ensure the routers power switch is set to the on position.
- Check the power plug socket with another device.
- Contact the technical support team.

Thank you.....