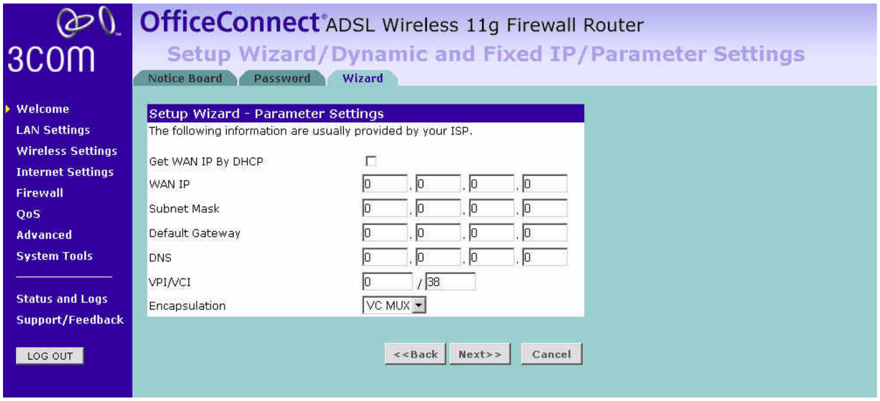
1. Enter your Internet IP address in the *WAN IP* field.
2. Enter the subnet mask in the *Subnet Mask* field.
3. Enter the default gateway IP address in the *Default Gateway* field.
4. Enter the DNS address in the *DNS* field.
5. Enter your VPI and VCI information in the *VPI/VCI* fields.
6. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* drop-down menu. This information should be provided to you by your ISP.
7. Check all of your settings, and then click *Next*.
   The LAN Settings screen will then be displayed (refer to Figure 24).

Dynamic/Fixed IP in 1483 Bridge Mode (For Multiple PCs)

For bridge mode to work, you need to assign an IP address to the Router. You can either configure the Router to obtain an IP address automatically from a DHCP server or assign a fixed or static IP address to it.

Figure 23 Dynamic/Fixed IP for Bridge Mode Screen



Setup Wizard - Parameter Settings

The following information are usually provided by your ISP.

Get WAN IP By DHCP	□
WAN IP	0 . 0 . 0 . 0
Subnet Mask	0 . 0 . 0 . 0
Default Gateway	0 . 0 . 0 . 0
DNS	0 . 0 . 0 . 0
VPI/VCI	0 / 38
Encapsulation	VC MUX

To obtain an IP address automatically from a DHCP server:
Check the *Get WAN IP By DCHP* checkbox, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 24).

To assign a fixed IP address:

1 Enter your Internet IP address in the *WAN IP* field.

2 Enter the subnet mask in the *Subnet Mask* field.

3 Enter the default gateway IP address in the *Default Gateway* field.

4 Enter the DNS address in the *DNS* field.

5 Enter your VPI and VCI information in the *VPI/VCI* text boxes.

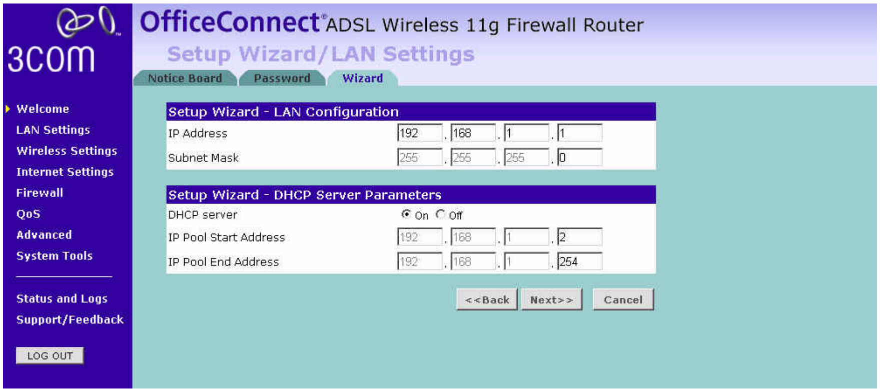
6 Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* drop-down menu. This information should be provided to you by your ISP.

7 Check all of your settings, and then click *Next*.
The LAN Settings screen will then be displayed (refer to Figure 24).

Setup Wizard - LAN Settings

The LAN Settings screen allows you to set the default IP address and DHCP client IP range for the Router.

Figure 24 The LAN Settings Screen



Setup Wizard - LAN Configuration

IP Address 192 . 168 . 1 . 1

Subnet Mask 255 . 255 . 255 . 0

Setup Wizard - DHCP Server Parameters

DHCP server ● On ○ Off

IP Pool Start Address 192 . 168 . 1 . 2

IP Pool End Address 192 . 168 . 1 . 254

1 To change the Router's default IP address, enter the new IP address in the *IP Address* field, and then enter the subnet mask in the *Subnet Mask* field.

2 Select the *On/Off* button to turn on/turn off the DHCP function in the *DHCP Server* field.

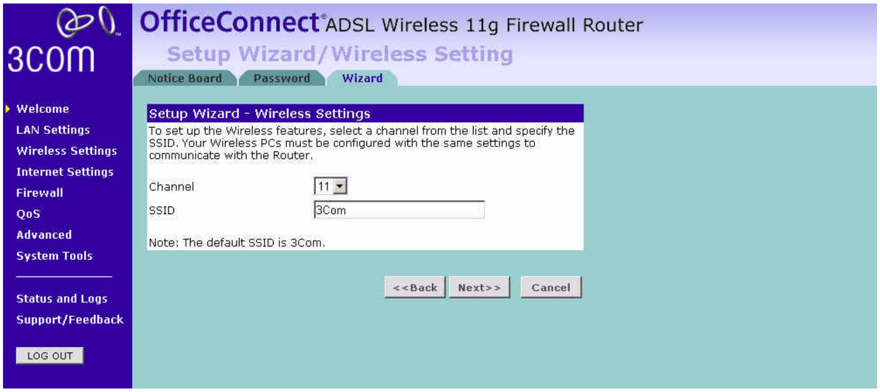
3 Enter the client IP address range in the *IP Pool Start Address* and *IP Pool End Address* fields.

4 Click *Next*. The Wireless Settings screen will be displayed (refer to Figure 25).

Setup Wizard - Wireless Settings

The Wireless Settings screen allows you to set up the SSID and radio channel used for the wireless connection.

Figure 25 Wireless Settings Screen



Setup Wizard - Wireless Settings

To set up the Wireless features, select a channel from the list and specify the SSID. Your Wireless PCs must be configured with the same settings to communicate with the Router.

Channel: 11

SSID: 3Com

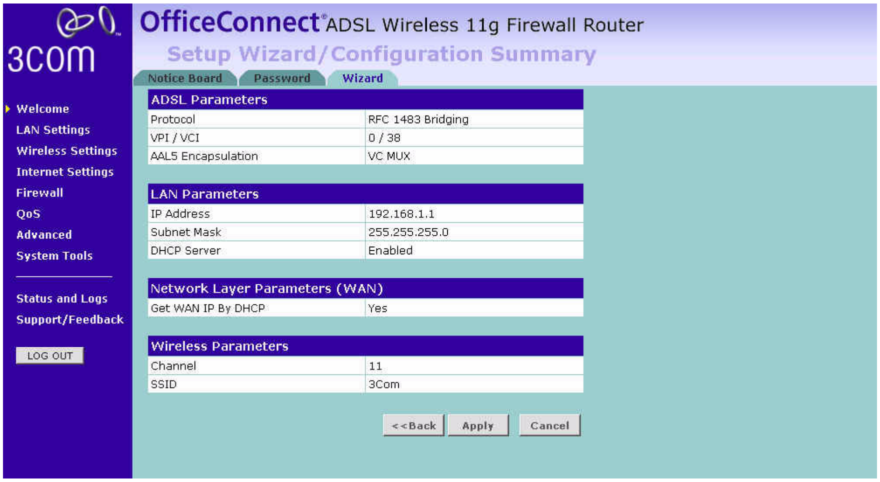
Note: The default SSID is 3Com.

1. Select the channel you want to use from the *Channel* drop-down menu.
2. Specify the SSID to be used by your Wireless Network in the *SSID* field. If there are other wireless networks in your area, you should give your wireless network an unique name.

Setup Wizard - Configuration Summary

When you have completed the Setup Wizard, a configuration summary will appear. Verify the configuration information of the Router and then click *Apply* to save your settings. 3Com recommends that you print out this page for your records.

Figure 26 Configuration Summary Screen



ADSL Parameters	
Protocol	RFC 1483 Bridging
VPI / VCI	0 / 38
AAL5 Encapsulation	VC MUX

LAN Parameters	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled

Network Layer Parameters (WAN)	
Get WAN IP By DHCP	Yes

Wireless Parameters	
Channel	11
SSID	3Com

Your Router is now configured and ready for use.

See Chapter 5 for a detailed description of the Router configuration.

5 CONFIGURING THE ROUTER

Navigating Through the Router Configuration Pages

This chapter describes all the screens available through the Router configuration pages, and is provided as a reference. To get to the configuration pages, enter the Router's default IP in the location bar of your browser. The default IP is **`http://192.168.1.1`**.

However, if you changed the Router LAN IP address during initial configuration, use the new IP address instead. Enter your password to login to the management interface. (The default password is *admin*).

Main Menu

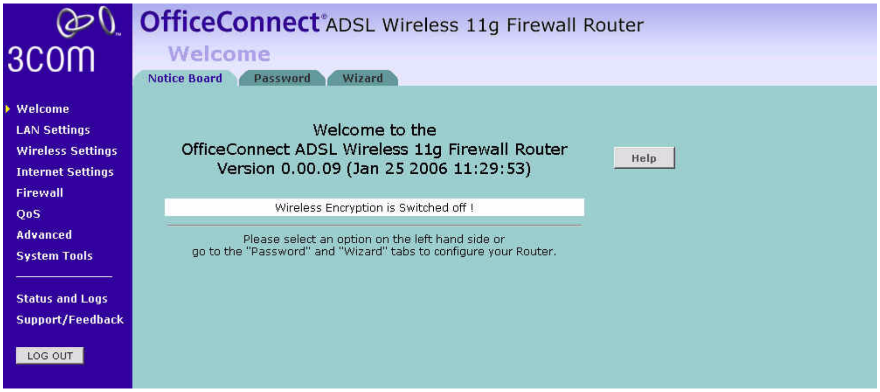
The main menu is located on the left side, as shown in Figure 27. When you click on an item from the main menu, that page will appear in the main part of the screen.

Welcome Screen

The *Welcome* screen shows the current software information.

Status

Figure 27 Welcome Screen



Welcome to the
OfficeConnect ADSL Wireless 11g Firewall Router
Version 0.00.09 (Jan 25 2006 11:29:53)

Wireless Encryption is Switched off !

Please select an option on the left hand side or go to the "Password" and "Wizard" tabs to configure your Router.

LAN Settings

Your Router is equipped with a DHCP server that will automatically assign IP addresses to each computer on your network. The factory default settings for the DHCP server will work with most applications. If you need to make changes to the settings, you can do so.

The LAN settings screen allows you to:

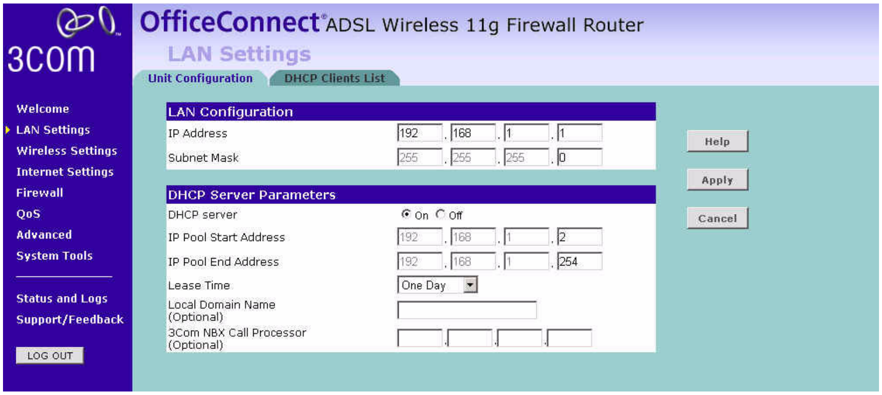
- Change the default IP address of the Router. The default IP is 192.168.1.1
- Change the Subnet Mask. The default setting is 255.255.255.0
- Enable/Disable the DHCP Server Function. The default is ON (Enabled).
- Specify the Starting and Ending IP Pool address. The default is Starting: 2 / Ending: 254.
- Specify the IP address Lease Time. The default is Half day.
- Specify a local Domain Name. The default is NONE.

The Router will also provide a list of all client computers connected to the Router.

LAN Settings

The LAN Settings screen is used to specify the LAN IP address of your Router, and to configure the DHCP server.

Figure 28 LAN Settings Screen



LAN Configuration

IP Address: 192 . 168 . 1 . 1

Subnet Mask: 255 . 255 . 255 . 0

DHCP Server Parameters

DHCP server: ● On ○ Off

IP Pool Start Address: 192 . 168 . 1 . 2

IP Pool End Address: 192 . 168 . 1 . 254

Lease Time: One Day

Local Domain Name (Optional):

3Com NBX Call Processor (Optional):

1 Enter the Router's *IP Address* and *Subnet Mask* in the appropriate fields. The default IP address is 192.168.1.1.

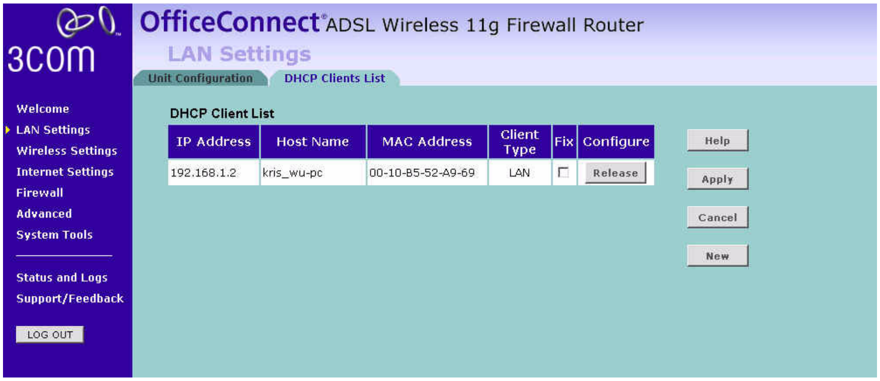
2 If you want to use the Router as a DHCP Server, select *On* in the *DHCP Server* field.

3. Enter the IP address range in the *IP Pool Start Address* and *IP Pool End Address* fields.
4. Specify the DHCP Lease time by selecting the required value from the *Lease Time* drop-down menu. The lease time is the length of time the DHCP server will reserve the IP address for each computer.
5. Specify the Local Domain Name for your network (this step is optional).
6. Enter the IP address of the NBX Call Processor in the *3Com NBX Call Processor* field (this step is optional).
7. Check all of your settings, and then click *Apply*.

DHCP Clients List

The DHCP Clients List provides details on the devices that have received IP addresses from the Router. The list is only created when the Router is set up as a DHCP server. The maximum number of 253 clients can be connected to the Router.

Figure 29 DHCP Clients List Screen



DHCP Client List

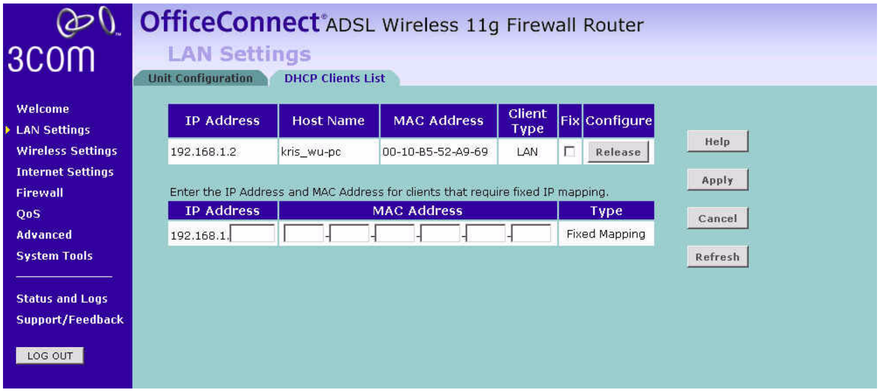
IP Address	Host Name	MAC Address	Client Type	Fix	Configure
192.168.1.2	kris_wu-pc	00-10-B5-52-A9-69	LAN	□	Release

For each device that is connected to the LAN, the following information is displayed:

- *IP address* — The Internet Protocol (IP) address issued to the client machine.
- *Host Name* — The client machine's host name, if configured.
- *MAC Address* — The Media Access Control (MAC) address of the client's network card.
- *Client Type* — Whether the client is connected to the Router by wired or wireless connection.

- Check the *Fix* checkbox to permanently fix the IP address.
- Click *Release* to release the displayed IP address.
- Click *New* to allocate an IP address to a MAC address (refer to Figure 30). Enter the required details and click *Apply* to save your settings.

Figure 30 Fixed Mapping Clients List Screen



IP Address	Host Name	MAC Address	Client Type	Fix	Configure
192.168.1.2	kris_wu-pc	00-10-B5-52-A9-69	LAN	□	Release

Enter the IP Address and MAC Address for clients that require fixed IP mapping.

IP Address	MAC Address	Type
192.168.1.___	___-___-___-___-___-___	Fixed Mapping

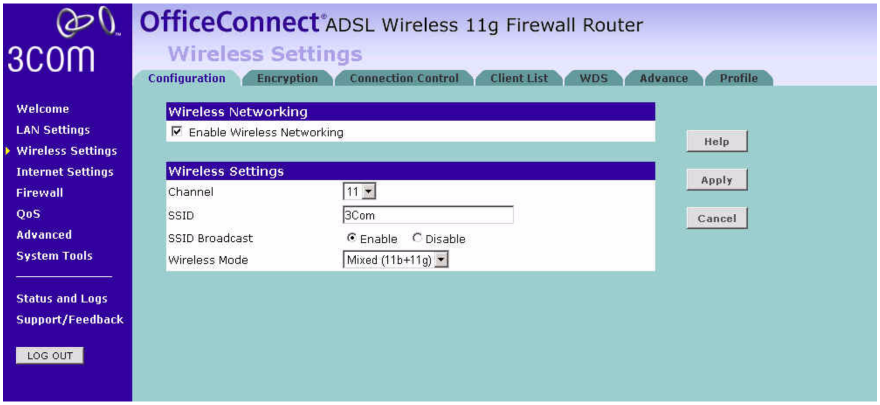
The DHCP server will give out addresses to both wired and wireless clients.

Wireless Settings

The Wireless Settings screens allow you to configure the settings for the wireless connections.

You can enable or disable the wireless connection for your LAN. When disabled, no wireless PCs can gain access to either the Internet or other PCs on your wired or wireless LAN through this Router.

Figure 31 Wireless Settings Screen



Wireless Networking

☑ Enable Wireless Networking

Wireless Settings

Channel	11
SSID	3Com
SSID Broadcast	● Enable ○ Disable
Wireless Mode	Mixed (11b+11g)

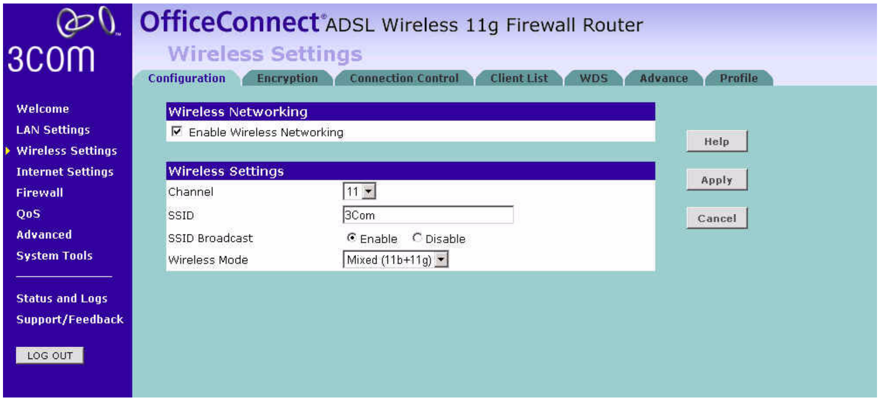
There are seven tabs available:

- Configuration
- Encryption
- Connection Control
- Client List
- WDS
- Advance
- Profile

Configuration

The Wireless Configuration Screen allows you to turn on/ turn off the wireless function, and set up basic wireless settings.

Figure 32 Wireless Configuration Screen



Wireless Networking

☑ Enable Wireless Networking

Wireless Settings

Channel	11
SSID	3Com
SSID Broadcast	● Enable ○ Disable
Wireless Mode	Mixed (11b+11g)

To enable the wireless function:

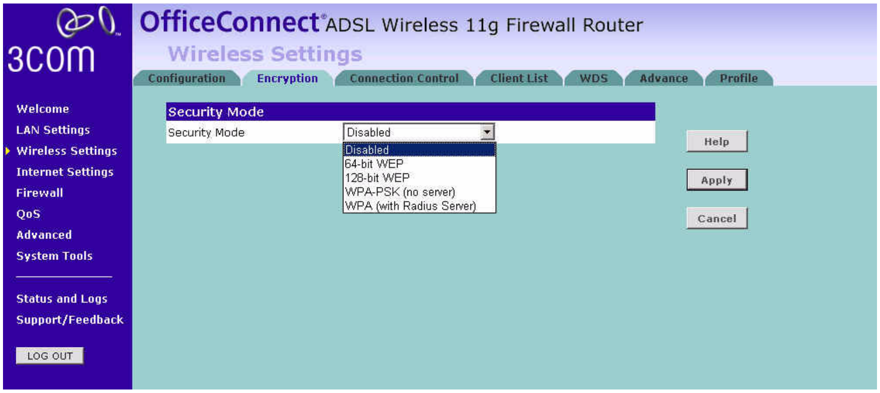
1. Check *Enable Wireless Networking* checkbox.
2. Select the wireless channel you want to use from the *Channel* drop-down menu.
3. Specify the SSID to be used by your wireless network in the *SSID* field. If there are other wireless networks in your area, you should give your wireless network an unique name.
4. Enable or disable *SSID Broadcast*.

   A feature of many wireless network adapters is that a computer's SSID can be set to ANY, which means it looks randomly for any existing wireless network. The available networks are then displayed in a site survey, and your computer can select a network. By clicking *disable*, you can block this random search, and set the computer's SSID to a specific network (for example, WLAN). This increases network security. If you decide to enable *SSID Broadcast*, ensure that you know the name of your network first.
5. Select whether your Router will operate in 11b mode only, 11g mode only, or mixed 11b and 11g from the *Wireless Mode* drop-down menu.
6. Click *Apply*.

Encryption

This feature prevents any non-authorized party from reading or changing your data over the wireless network.

Figure 33 Encryption Screen



Security Mode

Security Mode: Disabled

Select the wireless security mode that you want to use from the drop-down menu, and click *Apply*. There are five selections:

- Disabled (see page 45)
- 64-bit WEP (see page 46)
- 128-bit WEP (see page 47)
- WPA-PSK (no server) (see page 48)
- WPA (with RADIUS Server) (see page 49)

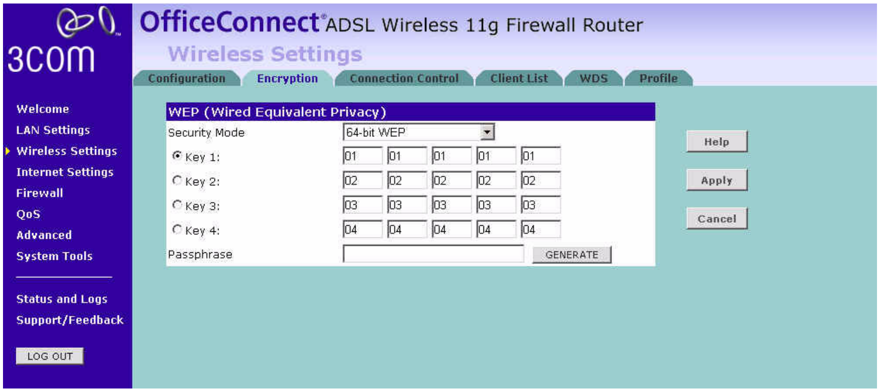
Disabled

In this mode, wireless transmissions will not be encrypted, and will be visible to everyone. However, when setting up or debugging wireless networks, it is often useful to use this security mode.

64-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be setup on your Router and wireless client devices to use WEP.

Figure 34 64-bit WEP Screen



WEP (Wired Equivalent Privacy)

Security Mode: 64-bit WEP

● Key 1: 01 01 01 01 01

○ Key 2: 02 02 02 02 02

○ Key 3: 03 03 03 03 03

○ Key 4: 04 04 04 04 04

Passphrase:

To enable 64-bit WEP:

1 You can enter the 64-bit WEP key manually:

- enter the WEP key as 5 pairs of hex digits (0-9, A-F).

Or you can generate the 64-bit WEP key automatically:

- enter a memorable passphrase in the *Passphrase* box, and then click *Generate* to generate the hex keys from the passphrase.

For 64-bit WEP, you can enter up to four keys, in the fields *Key 1* to *Key 4*. The radio button on the left hand side selects the key that is used in transmitting data.

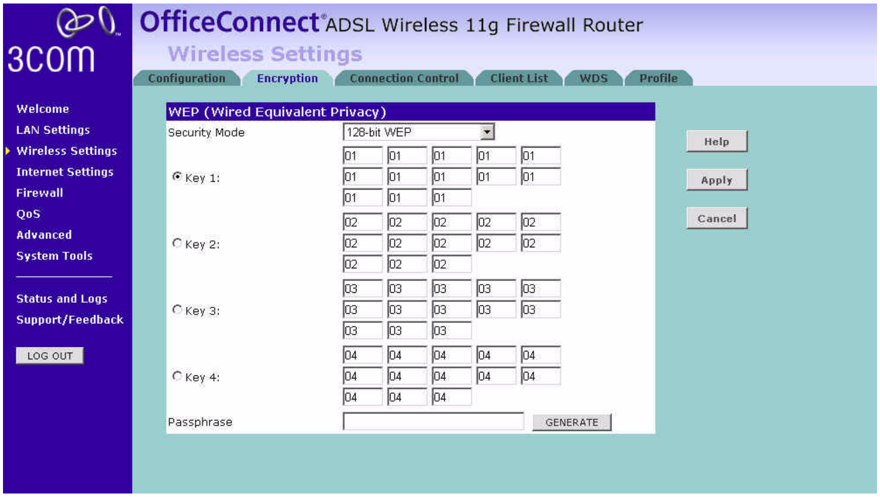
Note that all four WEP keys on each device in the wireless network must be identical.

2 Click *Apply*.

128-bit WEP

WEP is the basic mechanism to transmit your data securely over the wireless network. Matching encryption keys must be set up on your Router and wireless client devices to use WEP.

Figure 35 128-bit WEP Screen



WEP (Wired Equivalent Privacy)

Security Mode: 128-bit WEP

● Key 1:	01	01	01	01	01
	01	01	01	01	01
	01	01	01		
○ Key 2:	02	02	02	02	02
	02	02	02	02	02
	02	02	02		
○ Key 3:	03	03	03	03	03
	03	03	03	03	03
	03	03	03		
○ Key 4:	04	04	04	04	04
	04	04	04	04	04
	04	04	04		

Passphrase:

To enable 128-bit WEP:

1 You can enter the 128-bit WEP key manually:

- enter your WEP key as 13 pairs of hex digits (0-9, A-F).

Or you can generate the 128-bit WEP key automatically:

- enter a memorable passphrase in the *Passphrase* box, and then click *Generate* to generate the hex keys from the passphrase.

The WEP keys on each device on the wireless network must be identical.

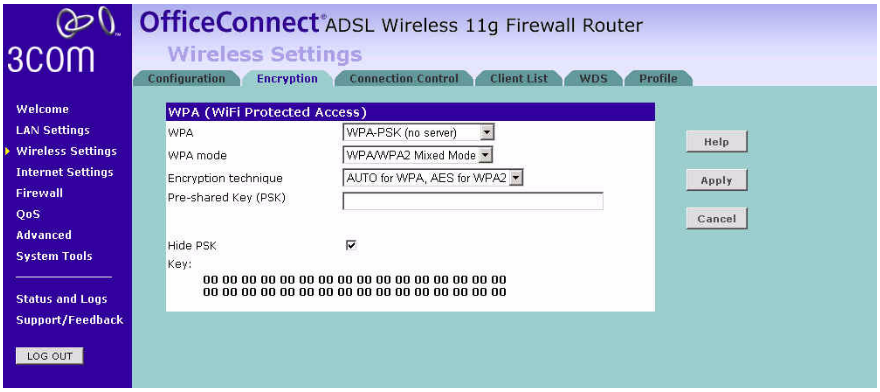
In 128-bit WEP mode, only one WEP key (key 1) can be specified.

2 Click *Apply*.

WPA-PSK (no server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. If your network does not have a Radius server. Select the no server option.

Figure 36 WPA-PSK (no server) Screen



WPA (WiFi Protected Access)

WPA: WPA-PSK (no server)

WPA mode: WPA/WPA2 Mixed Mode

Encryption technique: AUTO for WPA, AES for WPA2

Pre-shared Key (PSK):

Hide PSK ☑

Key:

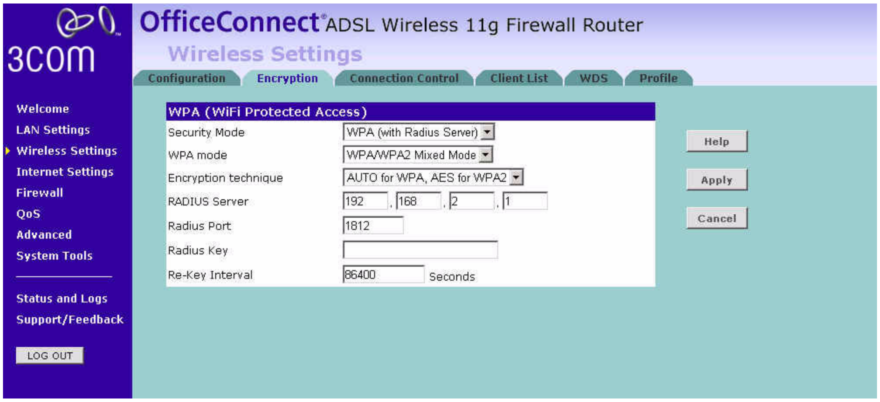
```
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

1. Select WPA-PSK (no server) from the *WPA* drop-down menu.
2. Select WPA mode from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.
3. Select Encryption technique from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
4. Enter the pre-shared key in the *Pre-shared Key (PSK)* field. The pre-shared key is a password, in the form of a word, phrase or series of letters and numbers. The key must be between 8 and 63 characters long and can include spaces and symbols. Each client that connects to the network must use the same key.
5. If you want the key that you enter to be shown on the screen as a series of asterisks (*), then check the *Hide PSK* checkbox.
6. Click *Apply*.

WPA (with RADIUS Server)

WPA (Wi-Fi Protected Access) provides dynamic key changes and constitutes the best security solution. This function requires that a Radius server is running on the network.

Figure 37 WPA (with RADIUS Server) Screen



WPA (WiFi Protected Access)

Security Mode	WPA (with Radius Server)
WPA mode	WPA/WPA2 Mixed Mode
Encryption technique	AUTO for WPA, AES for WPA2
RADIUS Server	192 . 168 . 2 . 1
Radius Port	1812
Radius Key	
Re-Key Interval	86400 Seconds

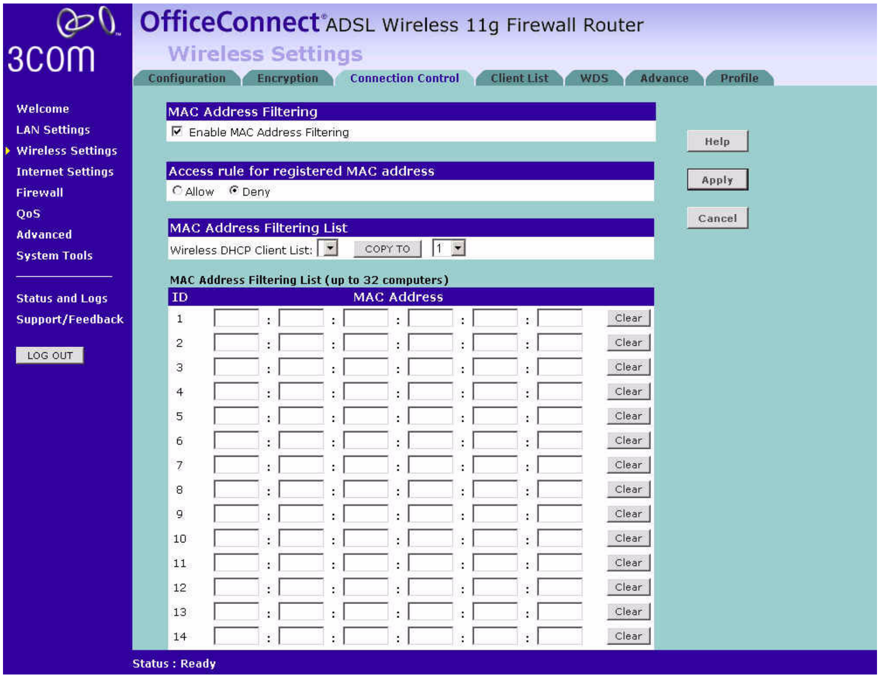
1. Select WPA with Radius server from the *Security Mode* drop-down menu.
2. Select WPA mode from the drop-down menu, three modes are supported: WPA, WPA2, and Mixed mode.
3. Select Encryption technique from the drop-down menu, four options are available: TKIP, AES, Auto for WPA AES for WPA2, and AES for both WPA and WPA2.
4. Enter the IP address of the RADIUS server on your network into the *RADIUS Server* field.
5. Enter the port number that the RADIUS server is operating on in the *RADIUS Port* field.
6. Enter the key for the RADIUS server in the *RADIUS Key* field.
7. By default, the WPA keys are changed every hour, but if you want to change this setting, you can do so by specifying the required time in the *Re-key Interval* field.
8. Click *Apply*.

Connection Control

This feature is used to filter the clients based on their MAC addresses.

Check the *Enable MAC Address Filtering* checkbox, the Connection Control screen will appear.

Figure 38 Connection Control Screen



MAC Address Filtering

☑ Enable MAC Address Filtering

Access rule for registered MAC address

○ Allow ● Deny

MAC Address Filtering List

Wireless DHCP Client List: [ ] COPY TO [1]

MAC Address Filtering List (up to 32 computers)

ID	MAC Address	
1	: : : : :	Clear
2	: : : : :	Clear
3	: : : : :	Clear
4	: : : : :	Clear
5	: : : : :	Clear
6	: : : : :	Clear
7	: : : : :	Clear
8	: : : : :	Clear
9	: : : : :	Clear
10	: : : : :	Clear
11	: : : : :	Clear
12	: : : : :	Clear
13	: : : : :	Clear
14	: : : : :	Clear

Status : Ready

There are two options available in the *Access rule for registered MAC address* field:

- if you click *Allow*, this means only the MAC addresses registered here in the list will be allowed to access the Router via wireless link.
- if you click Deny, this means the registered MAC addresses will not be able to access the Router via wireless link.

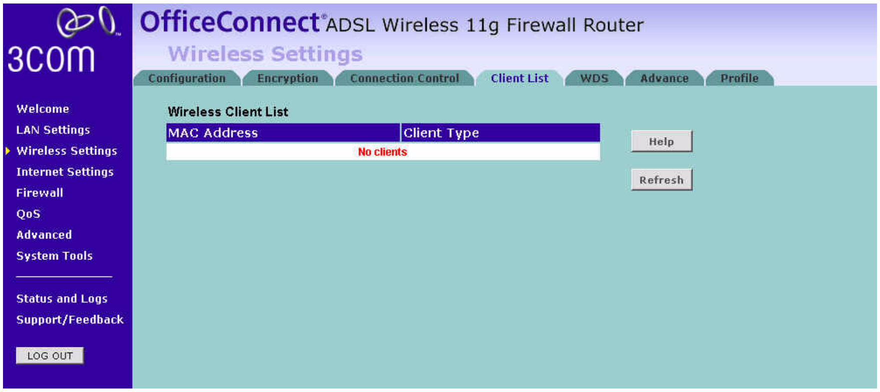
Use the *MAC Address Filtering List* to quickly copy the MAC addresses of the current wireless clients into the list table. You can define up to 32 MAC addresses to the list.

You can click *Clear* to delete the current entry in the list.

Client List

You can view the list of all wireless clients that are connected to the Router.

Figure 39 Client List Screen



Wireless Client List

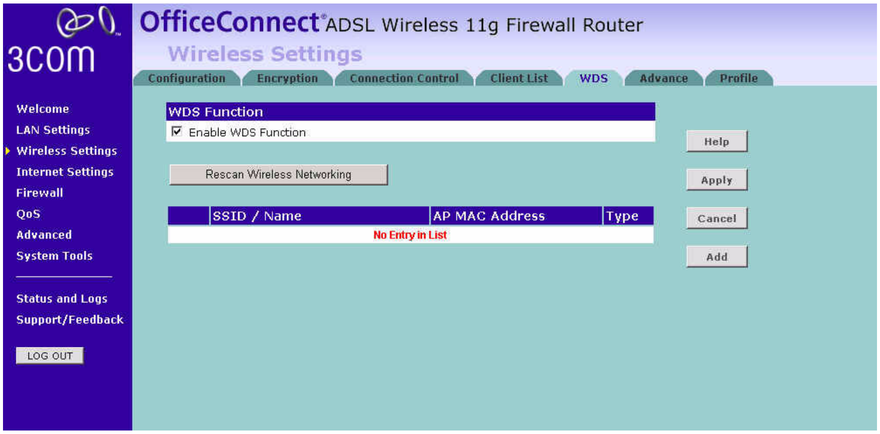
MAC Address	Client Type
No clients	

Click *Refresh* to update the list.

WDS Settings

The Router supports WDS (Wireless Distribution System). WDS enables one or more Access Points to rebroadcast received signals to extend range and reach, though this can affect the overall throughput of data.

Figure 40 Wireless WDS Settings Screen



WDS Function

☑ Enable WDS Function

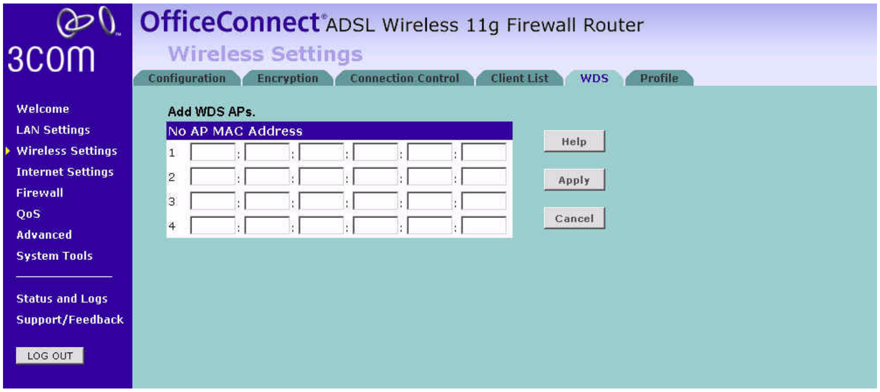
	SSID / Name	AP MAC Address	Type
	No Entry in List		

1 Check the *Enable WDS Function* checkbox.

2 To refresh the list of available access points, click *Rescan Wireless Networking*.

3 Click *Add* to add the MAC address of the AP to the list, the add WDS screen will appear (refer to Figure 41).

Figure 41 Add WDS screen



Add WDS APs.

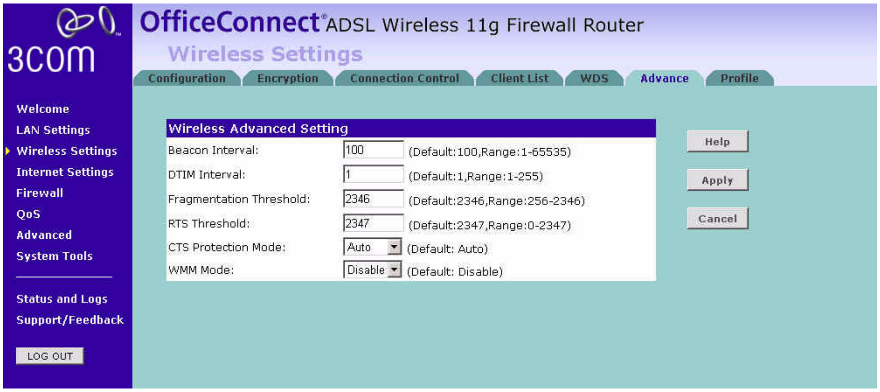
No	AP MAC Address
1	: : : : :
2	: : : : :
3	: : : : :
4	: : : : :

Enter the MAC address(es) of one or more access points in the *AP MAC Address* table, and click *Apply*.

Advance

The Advance screen allows you to configure detail settings for your wireless connection.

Figure 42 Wireless Advanced Setting screen



Wireless Advanced Setting

Beacon Interval:	100	(Default:100,Range:1-65535)
DTIM Interval:	1	(Default:1,Range:1-255)
Fragmentation Threshold:	2346	(Default:2346,Range:256-2346)
RTS Threshold:	2347	(Default:2347,Range:0-2347)
CTS Protection Mode:	Auto	(Default: Auto)
WMM Mode:	Disable	(Default: Disable)

There are six parameters that you can configure:

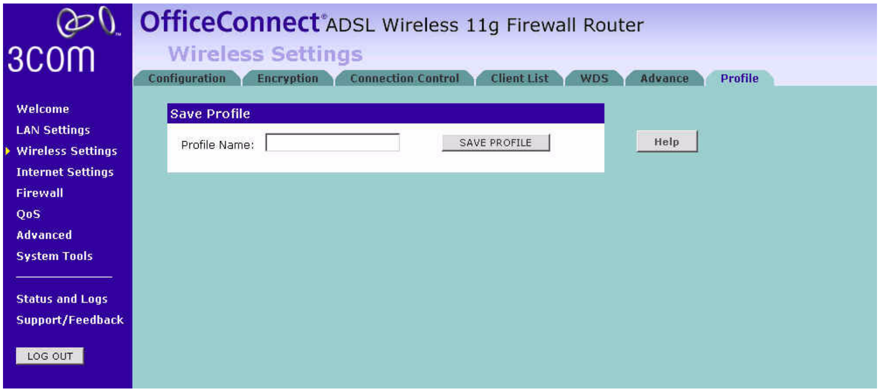
- Beacon Interval: this represents the amount of time between beacon transmissions.

- DTIM Interval: a DTIM interval, also known as a Data Beacon Rate, is the frequency at which an access point's beacon will include a DTIM. This frequency is usually measured in milliseconds (ms).
- Fragmentation Threshold: this is the maximum size for directed data packets transmitted. The use of fragmentation can increase the reliability of frame transmissions. Because of sending smaller frames, collisions are much less likely to occur.
- RTS Threshold: RTS stands for Request to Send, this parameter controls what size data packet the low level RF protocol issues to an RTS packet.
- CTS Protection Mode: CTS stands for Clear to Send. CTS Protection Mode boosts the router’s ability to intercept 802.11b/ 802.11g transmissions. Conversely, CTS Protection Mode decreases performance. Leave this feature disabled unless you encounter severe communication difficulties between the router and your wireless clients.
- WMM Mode: Wireless Multimedia (WMM) mode, which supports devices that meet the 802.11E QBSS standard.

Profile

This feature is used to quickly setup the configurations parameters and save them into one profile for easy connection.

Figure 43 Profile Screen



Save Profile

Profile Name:

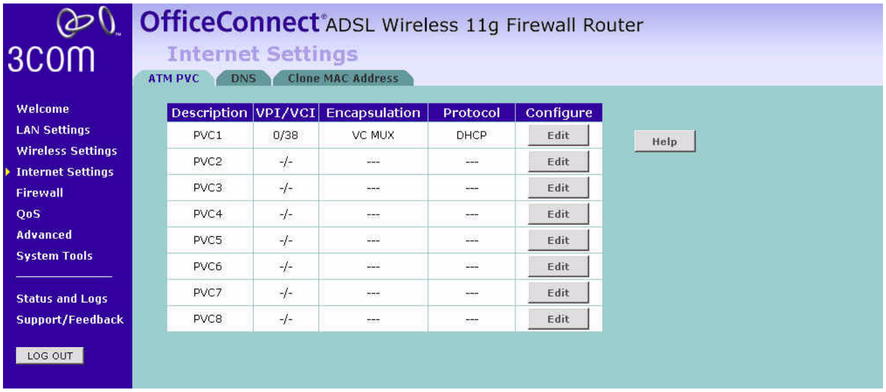
Internet Settings

You can configure the settings for your DSL connection.

ATM PVC

This feature is used to configure the parameters for your DSL connection. The information necessary to complete these screens should be obtained from your ISP. Check with your ISP first as for what type of connection you should choose.

Figure 44 ATM PVC Screen



Description	VPI/VCI	Encapsulation	Protocol	Configure
PVC1	0/38	VC MUX	DHCP	Edit
PVC2	-/-	---	---	Edit
PVC3	-/-	---	---	Edit
PVC4	-/-	---	---	Edit
PVC5	-/-	---	---	Edit
PVC6	-/-	---	---	Edit
PVC7	-/-	---	---	Edit
PVC8	-/-	---	---	Edit

You should see the first entry already contains information that’s been configured using the Wizard in the initial setup. If you want to change that information or set up other connection, click *Edit.*

There are six options available for the DSL connection mode:

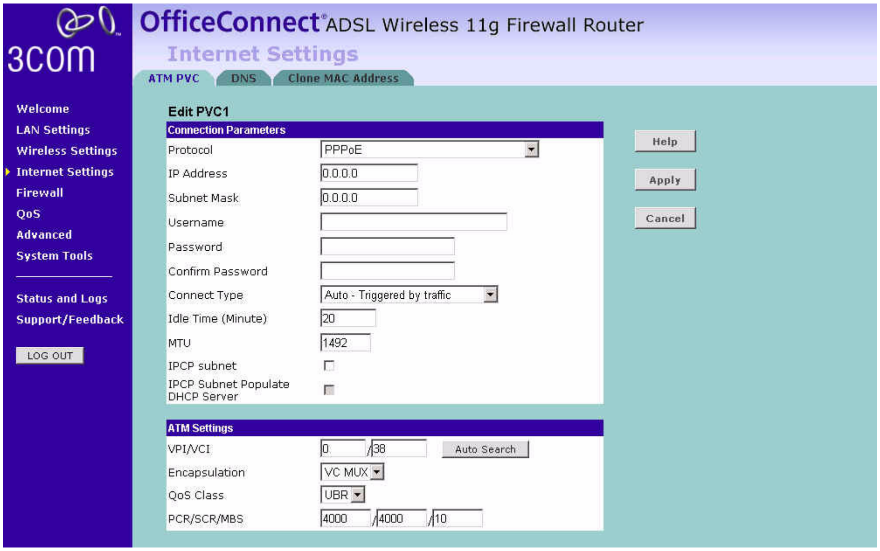
- *PPPoE* — PPP over Ethernet, providing routing for multiple PCs (see page 55)
- *PPPoA* — PPP over ATM, providing routing for multiple PCs (see page 57)
- *Bridge Mode* — RFC1483 Bridged Mode, for single PCs only (see page 59)
- *Routing Mode over ATM* — RFC1483 Routed Mode, for multiple PCs (see page 61)
- *Dynamic/Fixed IP in 1483 Bridge Mode (for multiple PCs)* (see page 63)
- *Disable* — To disable the Internet connection function (see page 64)

Click *Edit* to set the detail settings.

PPPoE

PPP over Ethernet, providing routing for multiple PCs. To configure this function correctly, you should obtain the information from your ISP.

Figure 45 PPPoE Settings Screen



Edit PVC1

Connection Parameters

Protocol	PPPoE
IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Username	
Password	
Confirm Password	
Connect Type	Auto - Triggered by traffic
Idle Time (Minute)	20
MTU	1492
IPCP subnet	□
IPCP Subnet Populate DHCP Server	□

ATM Settings

VPI/VCI	0 / 38
Encapsulation	VC MUX
QoS Class	UBR
PCR/SCR/MBS	4000 / 4000 / 10

1. Select *PPPoE* from the *Protocol* drop-down menu.
2. Enter the IP address and Subnet Mask information provided by your ISP into the *IP address* and *Subnet Mask* fields.
3. Enter the user name assigned to you by your ISP in the *Username* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Confirm Password* field.
4. Select the connection type from the *Connect Type* drop-down menu.
   - *Always Connected* means that Internet connection to your ISP is always on.
   - *Auto - Triggered by Traffic* means your Router will automatically connect to your ISP every time a PC needs to access the Internet.
   - *Manual - Start in Disconnected* means that after re-booting the Router, the Internet connection will need to be re-established manually by the user.
   - *Manual - Start in Connected* means that after re-booting the Router, it will automatically establish connection to your ISP.

- Manual - Start in Last State means that after re-booting the Router, the Internet connection will stay in the previous condition before the reboot.

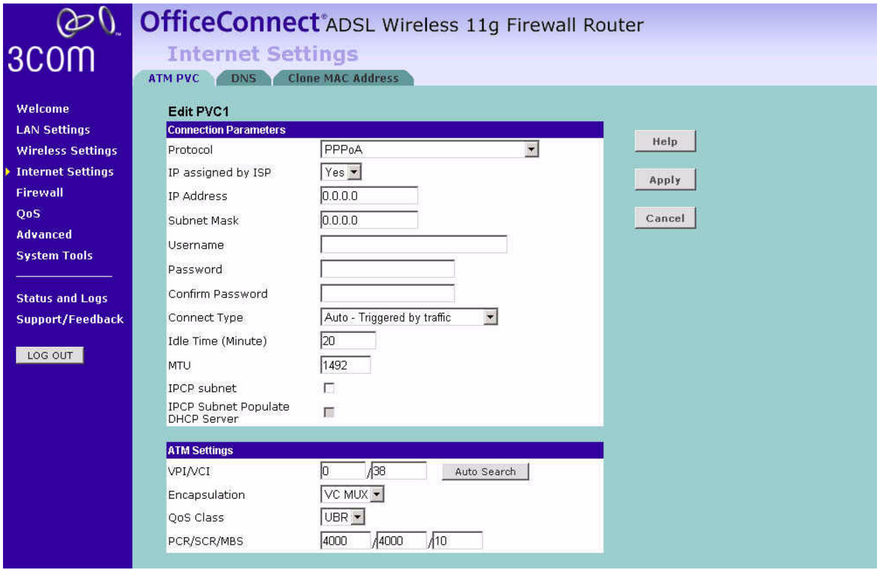
5. If you want your Router to automatically disconnect from the Internet after a period of inactivity, specify a time in the *Idle Time (Minutes)* field. (Enter a value of 0 to disable this timeout).
6. Enter the *MTU* value supplied by your ISP. If you do not know this, leave it at the default value.
7. The Router supports the IP Control Protocol (IPCP) Subnet Mask Support feature, check the *IPCP subnet* checkbox to enable it.
8. To use the IPCP Subnet Mask Support for the DHCP clients, check the *IPCP Subnet Populate DHCP Server* checkbox.
9. Enter the VPI and VCI values provided by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.
10. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* field. This information should be provided to you by your ISP.
11. Select the type of Quality of Service (CBR, UBR or VBR) in the QoS field.
    - CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
    - VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
    - UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".
12. Enter the PCR/SCR/MBS values. This information should be provided to you by your ISP.

13 Click *Apply*.

PPPoA

PPP over ATM, this is a popular choice among European DSL providers. To configure this function correctly, you should obtain the information from your ISP.

Figure 46 PPPoA Settings Screen



Edit PVC1

Connection Parameters	
Protocol	PPPoA
IP assigned by ISP	Yes
IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Username	
Password	
Confirm Password	
Connect Type	Auto - Triggered by traffic
Idle Time (Minute)	20
MTU	1492
IPCP subnet	☐
IPCP Subnet Populate DHCP Server	☐

ATM Settings	
VPI/VCI	0 / 38
Encapsulation	VC MUX
QoS Class	UBR
PCR/SCR/MBS	4000 / 4000 / 10

1 Select *PPPoA* from the *Protocol* drop-down menu.

2 IP assigned by ISP:

- Select *Yes,* if your ISP assigns your IP address dynamically, and proceed to next step.
- If your ISP has assigned you a fixed or static IP address, select *No* in the *IP assigned by ISP* field.
  Then enter the IP address and Subnet Mask information provided by your ISP into the *IP address* and *Subnet Mask* fields.

3 Enter the user name assigned to you by your ISP in the *Username* field. And enter the password assigned to you by your ISP in the *Password* field. Re-enter your password in the *Confirm Password* field.

4 Select the connection type from the *Connect Type* drop-down menu.

- *Always Connected* means that Internet connection to your ISP is always on.
- *Auto - Triggered by Traffic* means your Router will automatically connect to your ISP every time a PC needs to access the Internet.
- *Manual - Start in Disconnected* means that after re-booting the Router, the Internet connection will need to be re-established manually by the user.
- *Manual - Start in Connected* means that after re-booting the Router, it will automatically establish connection to your ISP.
- Manual - Start in Last State means that after re-booting the Router, the Internet connection will stay in the previous condition before the reboot.

5 If you want your Router to automatically disconnect from the Internet after a period of inactivity, specify a time in the *Idle Time (Minutes)* field. (Enter a value of 0 to disable this timeout).

6 Enter the *MTU* value supplied by your ISP. If you do not know this, leave it at the default value.

7 The Router supports the IP Control Protocol (IPCP) Subnet Mask Support feature, check the *IPCP subnet* checkbox to enable it.

8 To use the IPCP Subnet Mask Support for the DHCP clients, check the *IPCP Subnet Populate DHCP Server* checkbox.

9 Enter the VPI and VCI parameters provided to you by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.

10 Select the encapsulation type (LLC or VC MUX) in the *Encapsulation Type* field. This information is provided to you by your ISP.

11 Select the type of Quality of Service (CBR, UBR or VBR) in the QoS field.

- CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
- VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is

used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.

- UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".

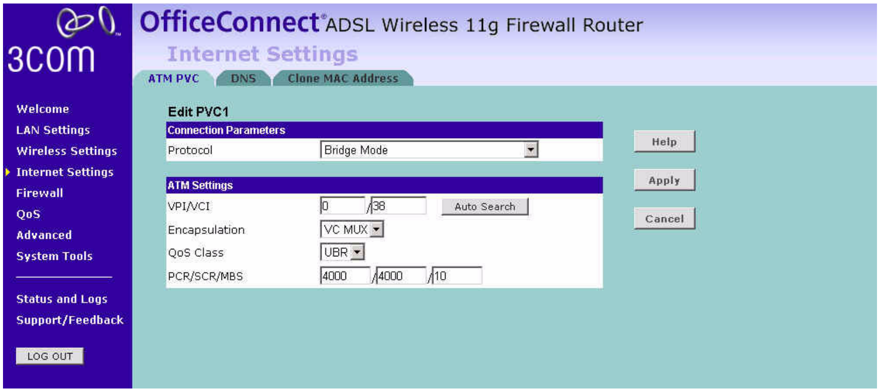
12 Enter the PCR/SCR/MBS values.

13 Click *Apply*.

Bridge Mode

If the ISP limits some specific computers to access Internet, that means only the traffic to/from these computers will be forwarded and the other will be filtered. In this case, bridge modem is used to connect to the ISP. The ISP will generally give one Internet account and limit only one computer to access the Internet. Check with your ISP to determine if this mode is used for your DSL connection. To configure the settings correctly, you should obtain the information from your ISP.

Figure 47 Bridge Mode Screen



Edit PVC1

Connection Parameters

Protocol: Bridge Mode

ATM Settings

VPI/VCI: 0 / 38

Encapsulation: VC MUX

QoS Class: UBR

PCR/SCR/MBS: 4000 / 4000 / 10

1 Select *Bridge Mode* from the *Protocol* drop-down menu.

2 Enter the VPI and VCI parameters in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.

3 Select the encapsulation type (LLC or VC MUX) in the *Encapsulation Type* field. This information should be provided to you by your ISP.

4 Select the type of Quality of Service that you want from the *QoS Class* drop-down menu.

- CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
- VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
- UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".

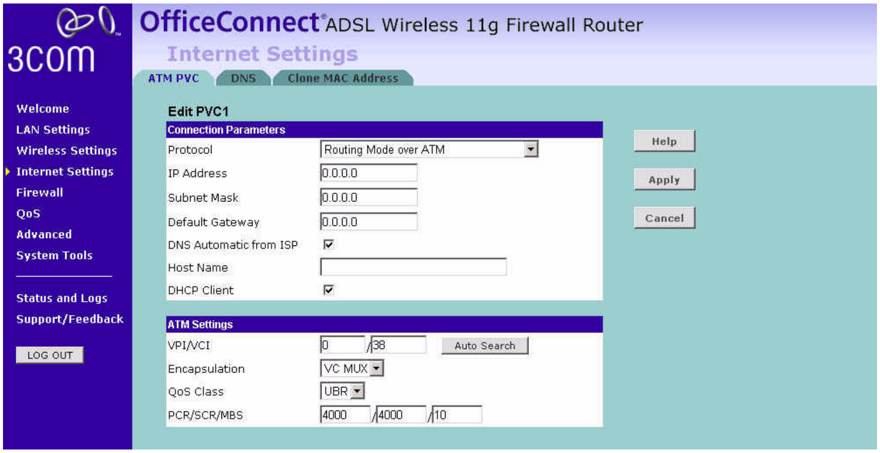
5 Enter the PCR/SCR/MBS values.

6 Click *Apply*.

Routing Mode over ATM (RFC 1483 Routed Mode)

This mode is commonly used with either dynamic or static IP addressing. In this mode the WAN ADSL port will be configured with an IP address provided by the ISP. To configure the settings correctly, you should obtain the information on this page from your ISP.

Figure 48 Routing Mode over ATM Screen



Edit PVC1

Connection Parameters

Protocol	Routing Mode over ATM
IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Default Gateway	0.0.0.0
DNS Automatic from ISP	☑
Host Name	
DHCP Client	☑

ATM Settings

VPI/VCI	0 / 38
Encapsulation	VC MUX
QoS Class	UBR
PCR/SCR/MBS	4000 / 4000 / 10

1. Select *Routing Mode over ATM* from the *Protocol* drop-down menu.
2. Enter the IP address, Subnet Mask and Default Gateway information provided by your ISP into the *IP address*, *Subnet Mask* and *Default Gateway* fields.
3. Check the *DNS Automatic from ISP* checkbox, if your ISP automatically configure DNS. However, if you need to configure DNS manually, enter the IP address in the *DNS Address* field. (If your ISP uses a secondary DNS, enter the IP address in the *Secondary DNS Address* field).
4. Enter the host name in the *Host Name* filed.
5. If your ISP uses DHCP to automatically assign IP addresses, check the *DHCP Client* checkbox.
6. Enter the VPI and VCI parameters provided to you by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.
7. Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* field. This information should be provided to you by your ISP.

8 Select the type of Quality of Service that you want from the *QoS Class* drop-down menu.

- CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
- VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
- UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".

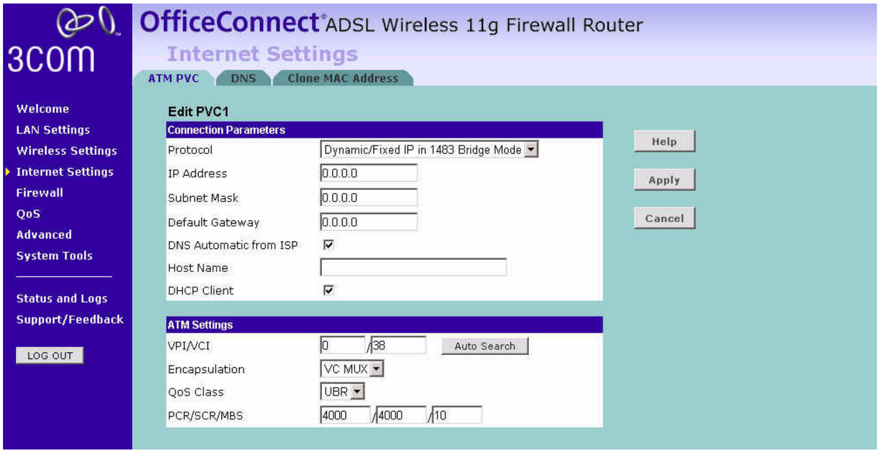
9 Enter the PCR/SCR/MBS values.

10 Click *Apply*.

Dynamic/Fixed IP in 1483 Bridge Mode (For Multiple PCs)

Your ISP uses fixed/dynamic IP to provide the Internet connection. To configure this function correctly, you should obtain the information on this page from your ISP.

Figure 49 Dynamic/Fixed IP for Bridge Mode Screen



Edit PVC1

Connection Parameters

Protocol	Dynamic/Fixed IP in 1483 Bridge Mode
IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Default Gateway	0.0.0.0
DNS Automatic from ISP	☑
Host Name	
DHCP Client	☑

ATM Settings

VPI/VCI	0 / 38
Encapsulation	VC MUX
QoS Class	UBR
PCR/SCR/MBS	4000 / 4000 / 10

1 Select *Dynamic/Fixed IP for Bridge Mode* from the *Protocol* drop-down menu.

2 Enter the IP address, Subnet Mask and Default Gateway information provided by your ISP into the *IP address*, *Subnet Mask* and *Default Gateway* fields.

3 Check the *DNS Automatic from ISP* checkbox, if your ISP automatically configure DNS. However, if you need to configure DNS manually, enter the IP address in the *DNS Address* field. (If your ISP uses a secondary DNS, enter the IP address in the *Secondary DNS Address* field).

4 Enter the host name in the *Host Name* filed.

5 If your ISP uses DHCP to automatically assign IP addresses, check the *DHCP Client* checkbox.

6 Enter the VPI and VCI parameters provided by your ISP in the *VPI* and *VCI* fields. You can click *Auto Search* to automatically find out this information.

7 Select the encapsulation type (LLC or VC MUX) in the *Encapsulation* field. This information will have been provided to you by your ISP.

8 Select the type of Quality of Service that you want from the QoS Class drop-down menu.

- CBR (constant bit rate): the CBR service class is intended for real-time applications, for example, those requiring tightly constrained delay and delay variation, such as voice and video applications. The consistent availability of a fixed quantity of bandwidth is considered appropriate for CBR service.
- VBR (variable bit rate): QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QoS. Compare with ABR, CBR, and UBR.
- UBR (unspecified bit rate): the UBR service class is intended for delay-tolerant or non-real-time applications, for example, those which do not require tightly constrained delay and delay variation, such as traditional computer communications applications. The UBR service may be considered as "best effort service".

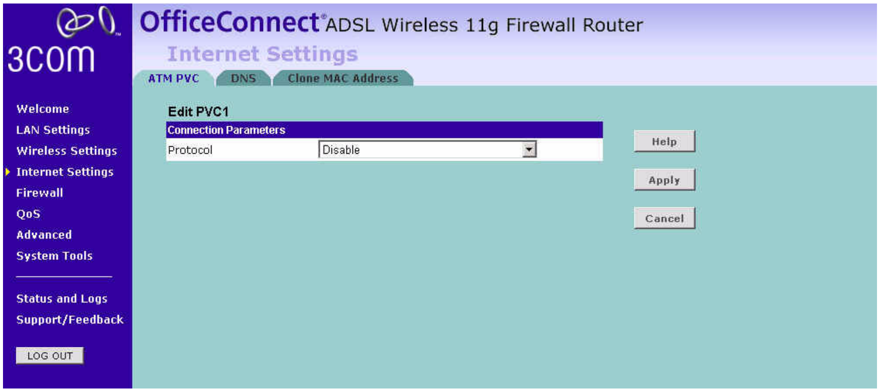
9 Enter the PCR/SCR/MBS values.

10 Click *Apply*.

Disable

Selecting this option means that you do not want your Router to connect to the Internet.

Figure 50 Disable Internet Connection Screen



Edit PVC1

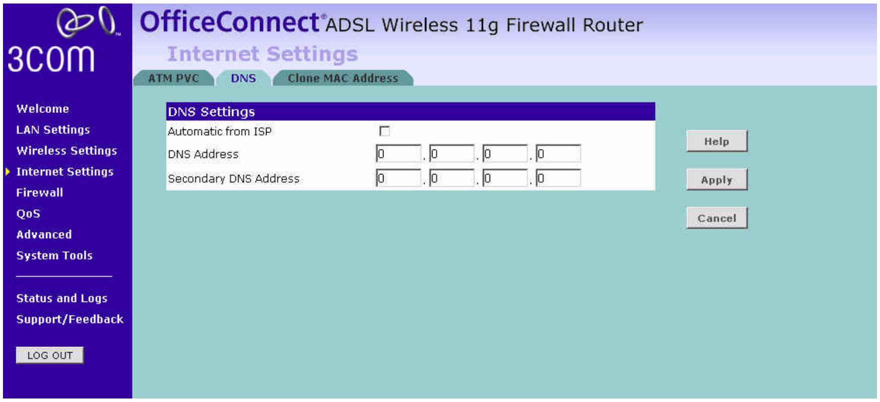
Connection Parameters	
Protocol	Disable

DNS

Domain Name Service (or Server), an Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, a DNS service must translate the name into the corresponding IP address. For example, the domain name www.example.com might translate to 198.105.232.4.

Check with your ISP for information on this page.

Figure 51 DNS Screen



OfficeConnect® ADSL Wireless 11g Firewall Router

Internet Settings

DNS Settings

Automatic from ISP □

DNS Address 0 . 0 . 0 . 0

Secondary DNS Address 0 . 0 . 0 . 0

If the DNS information is automatically provided by your ISP every time you connect to it, check the *Automatic from ISP* checkbox.

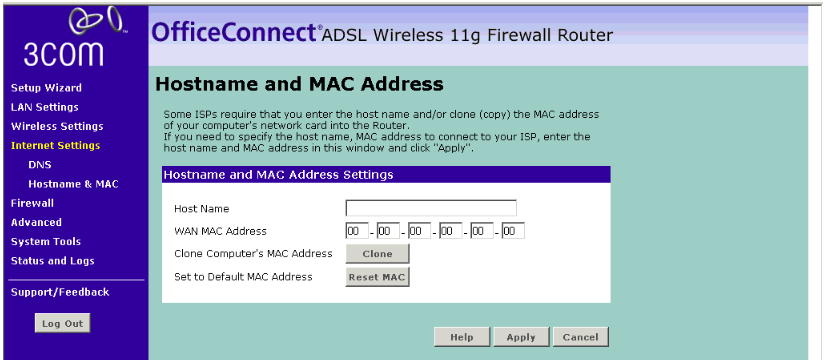
If your ISP provided you with specific DNS addresses to use, enter them into the appropriate fields on this screen and click *Apply*.

Many ISPs do not require you to enter this information into the Router. If you are using a Static IP connection type, you may need to enter a specific DNS address and secondary DNS address for your connection to work properly. If your connection type is Dynamic, PPPoA or PPPoE, it is likely that you do not have to enter a DNS address.

Hostname & Clone MAC address

To configure the Hostname and Clone MAC Address information for your Router, select *Internet Settings*, then go to the *Clone MAC address* tab. The Hostname and MAC Address screen displays.

Figure 52 Hostname and MAC Address Screen



Hostname and MAC Address

Some ISPs require that you enter the host name and/or clone (copy) the MAC address of your computer's network card into the Router.
If you need to specify the host name, MAC address to connect to your ISP, enter the host name and MAC address in this window and click "Apply".

Hostname and MAC Address Settings

Host Name	
WAN MAC Address	00 - 00 - 00 - 00 - 00 - 00
Clone Computer's MAC Address	Clone
Set to Default MAC Address	Reset MAC

1. Some ISPs require a host name. If your ISP has this requirement, enter the host name in the *Host Name* field.
2. Three different ways to configure the WAN MAC Address:
   - If your ISP requires an assigned MAC address, enter the values in the *WAN MAC address* field.

     or
   - If the computer you are now using is the one that was previously connected directly to the cable modem, click *Clone*.

     or
   - To reset the MAC Address to the default, click *Reset MAC*.
3. Click *Apply* to save the settings.

Firewall

From these pages, you can configure settings for the firewall.

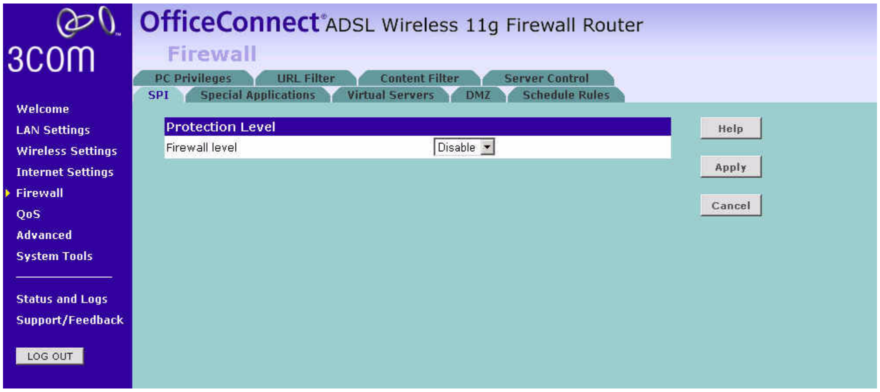
Your Router is equipped with a firewall that will protect your network from a wide array of common hacker attacks including Ping of Death (PoD) and Denial of Service (DoS) attacks. You can turn the firewall function off if needed. Turning off the firewall protection will not leave your network completely vulnerable to hacker attacks, but 3Com recommends that you leave the firewall enabled whenever possible.

SPI

Stateful Packet Inspection (SPI) - The Intrusion Detection Feature of the Router limits access for incoming traffic at the WAN port.

This feature is called a "stateful" packet inspection, because it examines the contents of the packet to determine the state of the communications; i.e., it ensures that the stated destination computer has previously requested the current communication. This is a way of ensuring that all communications are initiated by the recipient computer and are taking place only with sources that are known and trusted from previous interactions. In addition to being more rigorous in their inspection of packets, stateful inspection firewalls also close off ports until connection to the specific port is requested.

Figure 53 Firewall Screen



OfficeConnect® ADSL Wireless 11g Firewall Router

Firewall

Protection Level

Firewall level: Disable

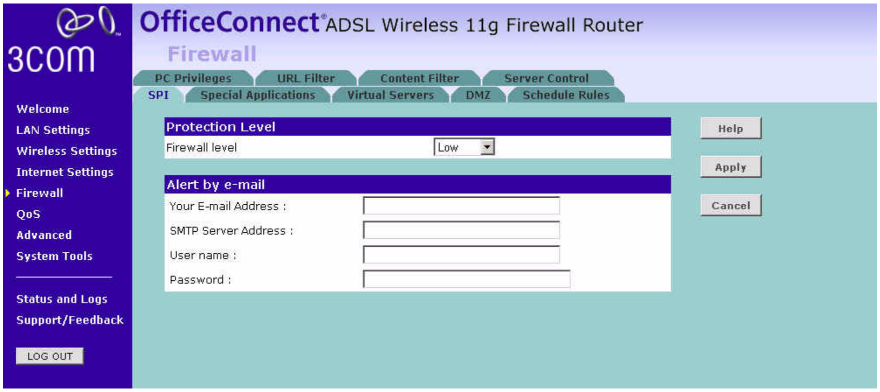
To enable the firewall function:

1. Select the level of protection (High, Medium, or Low) that you desire from the *Firewall level* drop-down menu.
2. Click *Apply*.

For low and medium levels of firewall protection, refer to Figure 54.

For high level of firewall protection, refer to Figure 55.

Figure 54 Low and Medium Level Firewall Protection Screen



Protection Level

Firewall level: Low

Alert by e-mail

Your E-mail Address :

SMTP Server Address :

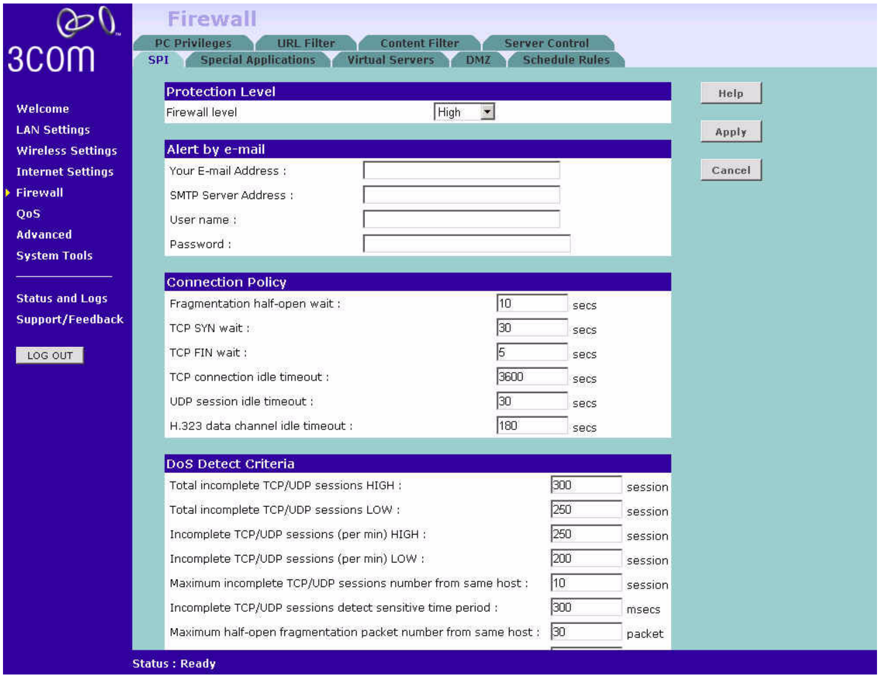
User name :

Password :

When abnormal network activity occurs, an alerting email will be send out to you, enter the following information to receive the email:

- Your E-mail Address
- SMTP Server Address
- User name
- Password

Figure 55 High Level Firewall Protection Screen



Protection Level

Firewall level: High

Alert by e-mail

Your E-mail Address :
SMTP Server Address :
User name :
Password :

Connection Policy

Fragmentation half-open wait :	10	secs
TCP SYN wait :	30	secs
TCP FIN wait :	5	secs
TCP connection idle timeout :	3600	secs
UDP session idle timeout :	30	secs
H.323 data channel idle timeout :	180	secs

DoS Detect Criteria

Total incomplete TCP/UDP sessions HIGH :	300	session
Total incomplete TCP/UDP sessions LOW :	250	session
Incomplete TCP/UDP sessions (per min) HIGH :	250	session
Incomplete TCP/UDP sessions (per min) LOW :	200	session
Maximum incomplete TCP/UDP sessions number from same host :	10	session
Incomplete TCP/UDP sessions detect sensitive time period :	300	msecs
Maximum half-open fragmentation packet number from same host :	30	packet

Status : Ready

If you select high level of protection, you will need to configure additional parameters for the firewall.

- Fragmentation half-open wait - Configures the number of seconds that a packet state structure remains active. When the timeout value expires, the router drops the un-assembled packet, freeing that structure for use by another packet.
- TCP SYN wait - Defines how long the software will wait for a TCP session to synchronize before dropping the session.
- TCP FIN wait - Specifies how long a TCP session will be maintained after the firewall detects a FIN packet.
- TCP connection idle timeout - The length of time for which a TCP session will be managed if there is no activity.
- UDP session idle timeout - The length of time for which a UDP session will be managed if there is no activity.
- H.323 data channel idle timeout - The length of time for which an H.323 session will be managed if there is no activity.

- Total incomplete TCP/UDP sessions HIGH - Defines the rate of new unestablished sessions that will cause the software to start deleting half-open sessions.
- Total incomplete TCP/UDP sessions LOW - Defines the rate of new unestablished sessions that will cause the software to stop deleting half-open sessions.
- Incomplete TCP/UDP sessions (per min) HIGH - Maximum number of allowed incomplete TCP/UDP sessions per minute.
- Incomplete TCP/UDP sessions (per min) LOW - Minimum number of allowed incomplete TCP/UDP sessions per minute.
- Maximum incomplete TCP/UDP sessions number from same host - Maximum number of incomplete TCP/UDP sessions from the same host.
- Incomplete TCP/UDP sessions detect sensitive time period - Length of time before an incomplete TCP/UDP session is detected as incomplete.
- Maximum half-open fragmentation packet number from same host - Maximum number of half-open fragmentation packets from the same host.
- Half-open fragmentation detect sensitive time period - Length of time before a half-open fragmentation session is detected as half-open.
- Flooding cracker block time - Length of time from detecting a flood attack to blocking the attack.