



A5500 Configuration Guide



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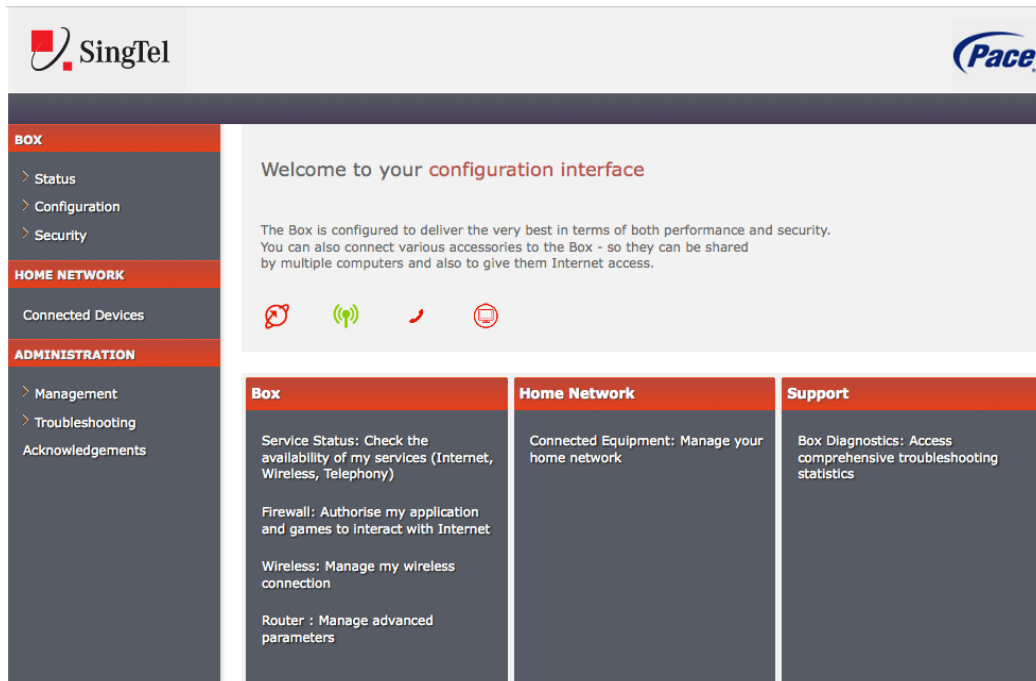
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Accessing your gateway configuration tool

Connect a computer to your home gateway using an Ethernet cable or WiFi. Open an Internet browser and enter the "http://192.168.1.254" or "http://app.singnet.com.sg" web address to access your home gateway configuration tool.



Configuring your broadband Internet access

To configure your internet connection:

- Under the **Box** heading, click **Configuration**, and then click **Internet**.
- Select the **Physical Link** type:
 - If your broadband connectivity is through the Ethernet port of your gateway, leave the setting as **Ethernet**, which is the default.
 - If your broadband connectivity is through the ADSL port of your gateway, click **ADSL**.
- Select your preferred **Connection Protocol**: **DHCP** (for Ethernet connectivity), **PPPoE**, or **PPPoA** (for ADSL connectivity).
 - If you set the connection protocol to PPPoE or PPPoA, enter the connection identifiers (**PPP Login** and **PPP Password**) given to you by your Internet service provider.
 - If you set the connection protocol to DHCP, you do not need to enter your username and password.
- If necessary, change the DNS server address.
- For configuring static IP address, select the **Use the following IP address** radio button in the **EOA / IPoA Parameters** panel. Enter the **IP address**, **subnet mask**, and **default gateway** in the respective text boxes.
- Click **OK** to confirm. Note that your gateway then restarts to affect your changes.

Internet Access Configuration

This page enables you to configure your main internet connection parameters.

Connection Mode

Physical Link: ADSL **Ethernet** Auto

Connection Protocol: DHCP PPPoE

Main Internet Access

ADSL Parameters

ADSL Mode: WARNING: Changing ADSL mode will automatically reboot the box

VPI / VCI: /

PPP Parameters

PPP Login:

PPP Password: Leave blank to keep existing password

Confirm PPP Password:

EoA / IPoA Parameters

Obtain an IP address automatically

Use the following IP address:

IP Address:

Subnet Mask:

Default Gateway:

DNS parameters

Obtain an DNS Servers automatically

Use the following DNS Servers:

Primary DNS Server:

Secondary DNS Server:

OK

Configuring your local network

The default local IP address of your gateway is 192.168.1.254. The DHCP server is enabled by default and your connected hardware items will have an IP address in the range 192.168.1.1 to 192.168.1.253. The default lease time for an IP address is 240 minutes. To change these default settings:

- Click **LAN** under the **Configuration** sub-heading. The **LAN Configuration** page shows up.
- If necessary, change the IP address of your gateway and the subnet mask of your wireless network.
- If necessary, change the IP address range. You can also change the default lease time, which represents the number of minutes you can use the assigned IP address before the DHCP lease expires.
- To disable the DHCP server, click **Disabled** next to **DHCP server**.

Some LAN clients require fixed IP addresses. For such clients, you must reserve and assign an IP address on the DHCP server. These reservations are permanent lease assignments, which are used to ensure that a specified LAN client on your network is always assigned the same IP address. To reserve an IP address for a LAN client:

- Navigate to the **Fixed IP addresses assigned by the DHCP server** panel.
- Click **+ Add a DHCP rule**.

- Edit the default **name** of the LAN client, its **MAC address**, and the **IP address** you want to reserve for it.
- Click **OK** to confirm.

LAN Configuration

You can use this configuration page to automatically configure your home network so that your computers can share the internet connection. If you prefer, you can still enter your parameters manually.

Local Network 1

IP Address: 192.168.1.254
 Subnet Mask: 255.255.255.0

DHCP Server Disabled **Enabled**

Address Range: 192.168.1.1 - 192.168.1.253
 Lease Time: 240 minutes

Fixed IP addresses assigned by the DHCP server

| Name | MAC | IP |
|---|-------------------|-------------|
| X MyComputer | 00:00:00:00:00:00 | 192.168.1.1 |

+ Add a DHCP rule

OK

Configuring your wireless network

Your gateway supports WiFi standard 802.11g and 802.11n, but is also compatible with standard 802.11b.

To change your WiFi mode, click **Wireless** under the **Configuration** sub-heading. On the **Wireless Configuration** page that shows up, use the **Wireless Mode** drop-down list to change your WiFi mode:

- 802.11b: to connect with 802.11b devices only.
- 802.11g: to connect with 802.11g devices only.
- 802.11n: to connect with 802.11n devices only.
- 802.11b+g: to connect with both 802.11b and 802.11g WiFi device types.
- 802.11g+n: to connect with both 802.11g and 802.11n WiFi device types.
- 802.11b+g+n: to connect with all WiFi device types.
- Auto: to let your gateway select the best WiFi mode.

Note that, by default, your gateway is configured to allow wireless connections. You can disable this by setting **Wireless State** to **Disabled**.

By default, your gateway automatically selects the best WiFi channel. However, you can select a channel manually.

Wireless Configuration

This page enables you to configure your wireless network parameters.

General Wireless Parameters

Wireless State: Disabled **Enabled**

Wireless Mode: Auto

Channel: Auto (11)

Transmit Power: 7

Note: Only WPA2 or WPA/WPA2 supports 802.11ng or 802.11bgn modes.

Select an appropriate power level for your wireless connection from the **Transmit Power** drop-down box. The available range is 1 through 7. Higher the setting, higher is the power the transmitted signals and, therefore, coverage of your wireless network. The table below shows the relation between the transmit power value and its associated radio output power levels.

| Transmit Power | Radio Output Power (dBm) |
|----------------|--------------------------|
| 1 | 14 |
| 2 | 15 |
| 3 | 16 |
| 4 | 17 |
| 5 | 18 |
| 6 | 19 |
| 7 | 23 |

Enter a name assigned to your wireless network in the **Name of SSID** text box. The default name is SINGTEL-XXXX, where XXXX represents the last four digits of your gateway serial number (for example, SINGTEL-1659).

By default, your gateway broadcasts the SSID, which enables the visibility of your gateway to users who scan to connect to a wireless network. You can choose to disable the broadcast by selecting the **Mask SSID** check box. Note that when you disable the SSID broadcast, you will have to manually add a wireless profile in the LAN client to connect to your wireless network instead of selecting your SSID from a typical scan.

SSID Parameters

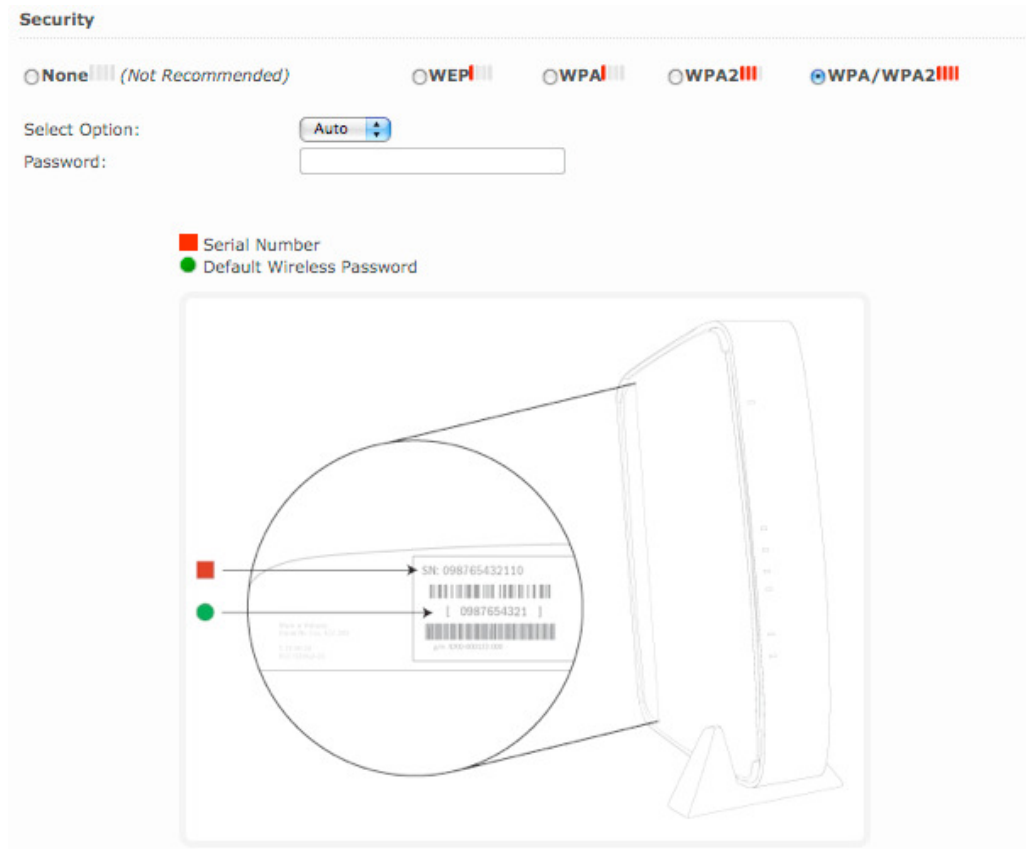
SSID (Name of Wireless Network)

Name of SSID: Mask SSID:

Securing your wireless network

To secure your wireless network, click **Wireless** under the **Configuration** sub-heading. On the **Wireless Configuration** page that shows up, navigate to the **Security** panel.

The default encryption type is **WPA/WPA2**, but you can choose another. The default WPA2 password is printed on the label on the right bottom side of your gateway.



The following table provides more information about the supported encryption types:

| Authentication type | Description |
|---------------------|--|
| WEP | The Wireless Encryption Protocol (WEP) is an older security protocol that allows any wireless clients within the radio range to access your network without an encryption key. This setting provides the least level of security. For security reasons, do not select this setting unless there is a compatibility issue with an older wireless client. For added protection, set an encryption key on your access point and enter the same key into your other wireless clients. Use the Select Option drop-down list to select between 64-bit and 128-bit encryption mechanisms for WEP. |
| WPA | This setting provides good security and works with most recent wireless clients. This setting requires an encryption key on the access point and the wireless client configured to use Wi-Fi Protected Access – Pre-Shared Key (WPA-PSK) with the same encryption key. With WPA, you can use only the Temporal Key Integrity Protocol (TKIP) encryption mechanism. |
| WPA2 | This setting requires that wireless clients use only WPA2 to access your networks. An encryption key must be configured on the access point and entered into the wireless client. WPA2 is currently the most secure Wi-Fi encryption protocol but may not be available on older wireless clients. With WPA2, you can use only the Advanced Encryption Standard (AES) encryption mechanism. |
| WPA/WPA2 | This setting allows a wireless client to use either WPA or WPA2 to access your network. An encryption key must be configured on the access point and the same key must be entered on the wireless client. Use the Select Option drop-down list to select between TKIP (for clients that support WPA) and AES (for clients that support WPA2) encryption mechanisms. We recommend you to leave the setting as Auto (default), which will enable your gateway to use the appropriate encryption mechanism depending on the wireless client. |

You can also secure your wireless network using the Wi-Fi Protected Setup (WPS). When WPS is enabled, your gateway automatically detects the presence of a WPS-enabled LAN client; thus, simplifying the process of accessing your wireless network. Your gateway supports both the WPS configuration methods: PIN-based and Push Button Configuration (PBC) based.

To set up WPS:

- Select the **Enable WPS** check box. This enables the configuration of WPS using the PBC method.
- Click either the **Push Button** on the page or the **WPS** button on the front panel of your gateway. You can then use the PUSH method on your LAN client (as advised by its manufacturer).

The synchronization between the access point and the client should be complete within 120 seconds.

The screenshot shows the 'Wireless Protected Setup' configuration interface. It includes a section with the following elements:

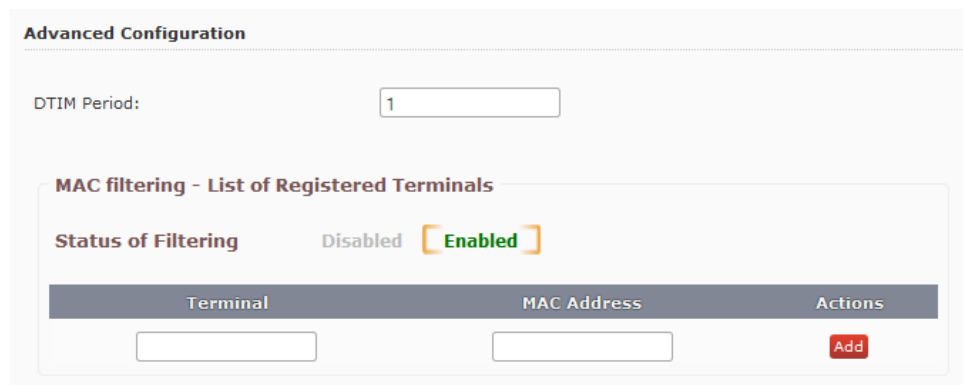
- Enable WPS:** A checkbox that is currently checked.
- WPS Method:** A dropdown menu with 'PBC' selected.
- Push Button:** A button located below the configuration options.

- If you want to use the PIN method instead, select **PIN** from the **WPS Method** drop-down list box. Enter the PIN generated by the LAN client in the Enter PIN text box. Click **Connect** to establish the wireless connection.



The image shows a 'Wireless Protected Setup' configuration window. It includes a checkbox for 'Enable WPS' which is checked, a dropdown menu for 'WPS Method' set to 'PIN', and an 'Enter PIN:' text box with a 'Connect' button next to it.

MAC address filtering is disabled by default. When enabled, the wireless connection is granted only to those LAN clients whose MAC addresses are registered.



The image shows an 'Advanced Configuration' window. At the top, there is a 'DTIM Period:' field with the value '1'. Below this is a section titled 'MAC filtering - List of Registered Terminals'. It shows 'Status of Filtering' with 'Disabled' and 'Enabled' options, where 'Enabled' is selected. Below this is a table with columns for 'Terminal', 'MAC Address', and 'Actions'. There are two empty input boxes under 'Terminal' and 'MAC Address', and an 'Add' button under 'Actions'.

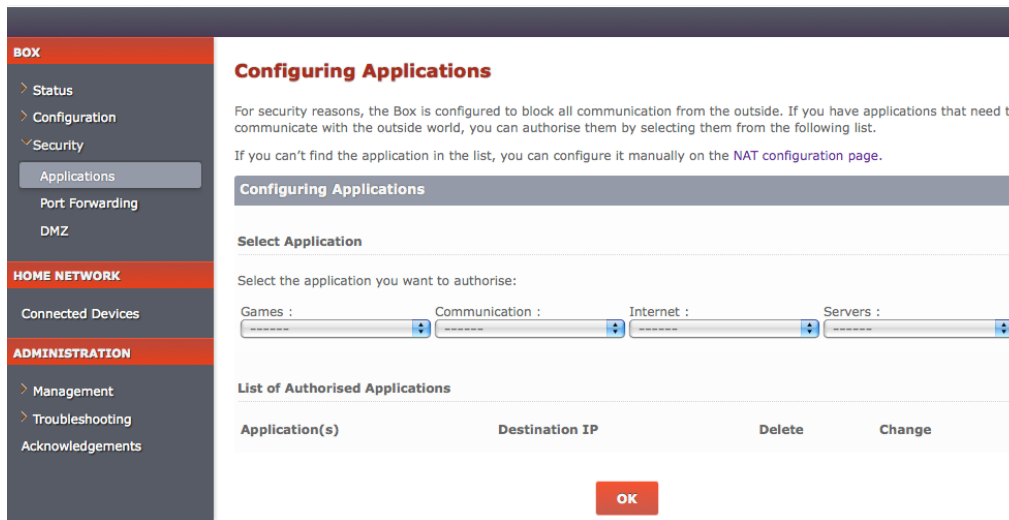
The Delivery Traffic Indication Message period (**DTIM Period**) determines the interval at which the access point sends its broadcast traffic.

Authorising programs to access the Internet

Your gateway is, by default, configured to block all communications initiated from outside. This function may affect how some applications operate: online games, communication tools (email, chat, video conferencing, etc.), and server applications (FTP, SMTP).

To allow some of your applications to access your network from outside:

- Under the **Box** heading, click **Security**, and then click **Applications**.
- On the **Configuring Applications** page, select the applications you need from the drop-down lists.
- Click **OK** to confirm.

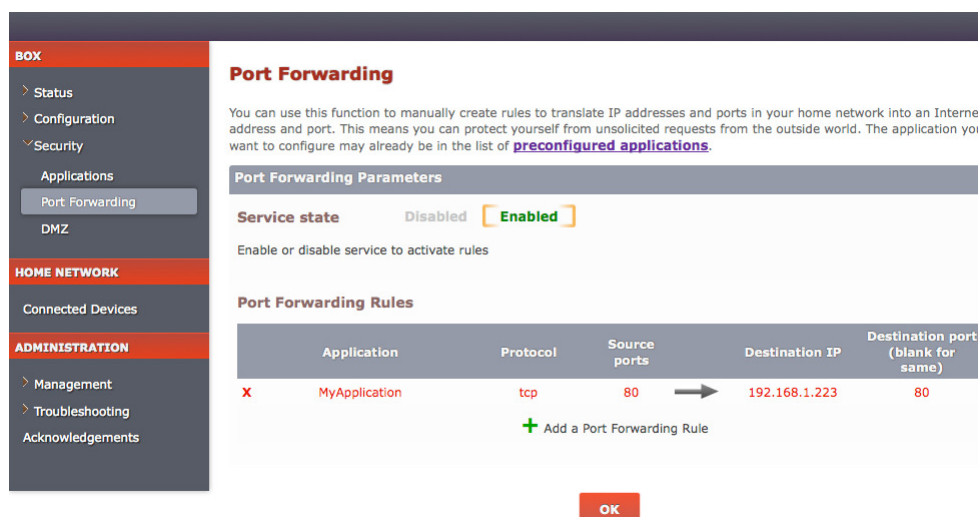


Configuring port forwarding

The forwarding table allows all the packets received via a specific port to be transmitted to a specific machine on the internal network. Therefore, if you want to be able to access a web server operating on machine 192.168.1.135 from outside, you will have to define a forwarding rule that redirects all the TCP packets received via port 80 to another defined port on machine 192.168.1.135.

To configure port forwarding:

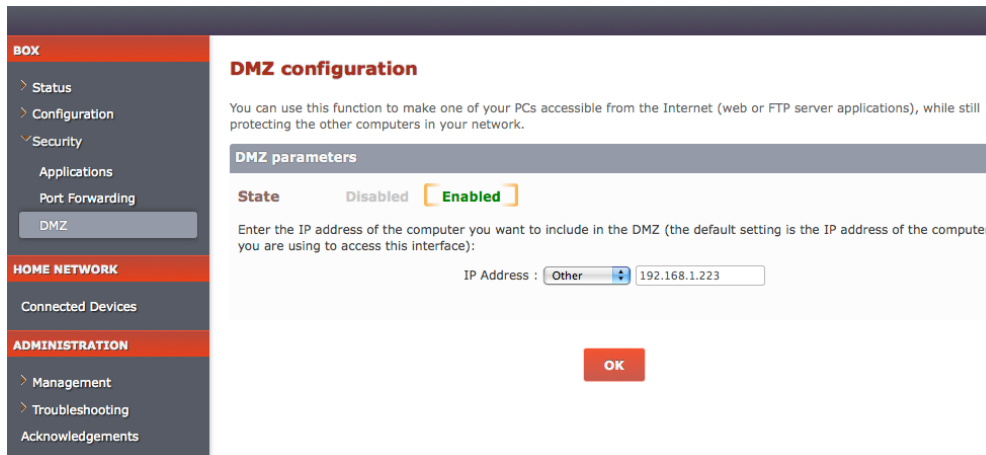
- Under the **Box** heading, click **Security**, and then click **Port Forwarding**.
- On the **Port Forwarding** page, click **+ Add a Port Forwarding Rule**.
- If required, edit the default application name by clicking on it.
- Select the protocol type: TCP or UDP.
- Enter the port that has to be forwarded to the internal service.
- Indicate the address of the hardware on the local network, followed by the destination port. The request will be forwarded to this private address.



Defining a DMZ

The DMZ enables you to show a machine on the Internet with no restriction on the ports used. It allows you to open all previously undefined ports (port forwarding) to a single LAN machine:

- Under the **Box** heading, click **Security**, and then click **DMZ**.
- On the **DMZ configuration** page, click **Enabled** to enable the service.
- Enter the IP address of the machine that will be in the DMZ. You can also select the name of the host from the drop-down list.
- Click **OK** to confirm.



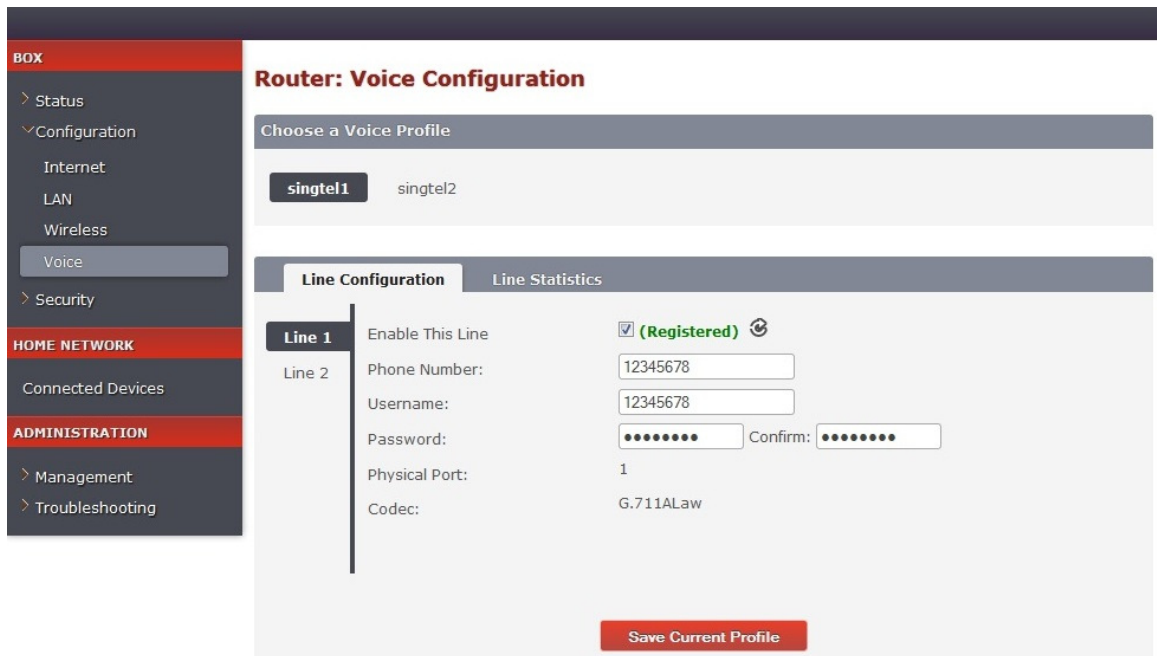
The screenshot shows a web interface for configuring a DMZ. On the left is a navigation menu with sections: **BOX** (containing Status, Configuration, Security, Applications, Port Forwarding, and DMZ), **HOME NETWORK** (containing Connected Devices), and **ADMINISTRATION** (containing Management, Troubleshooting, and Acknowledgements). The main content area is titled **DMZ configuration** and includes a descriptive paragraph: "You can use this function to make one of your PCs accessible from the Internet (web or FTP server applications), while still protecting the other computers in your network." Below this is a section for **DMZ parameters** where the **State** is set to **Enabled** (indicated by a green box). A text box prompts the user to "Enter the IP address of the computer you want to include in the DMZ (the default setting is the IP address of the computer you are using to access this interface):". The IP address field is set to "192.168.1.223" with a dropdown menu showing "Other". An **OK** button is located at the bottom right of the configuration area.

Configuring phone lines

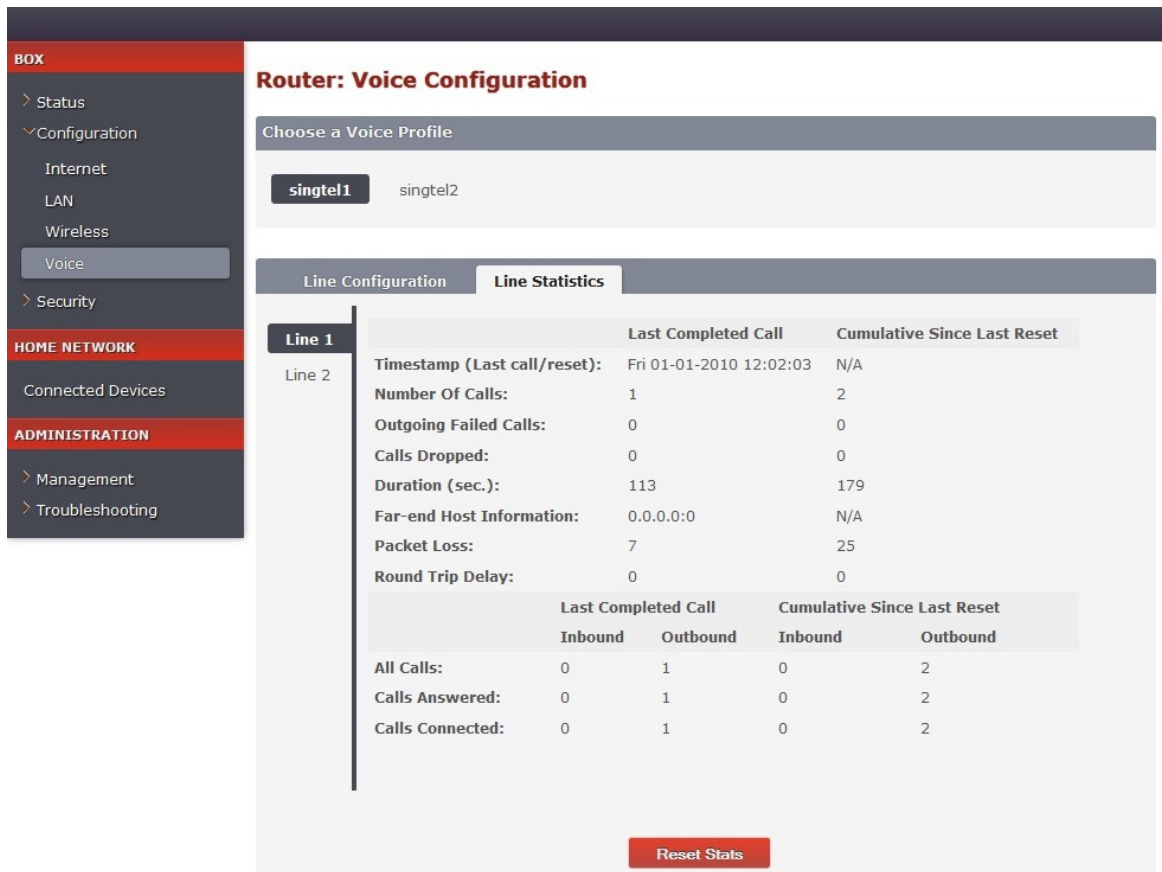
You can configure one or two phone lines at a time on your gateway. In addition, you can configure the user name and password of your VOIP account to prevent unauthorized access.

To configure your phone lines:

- Under the **Box** heading, click **Configuration**, and then click **Voice**.
- On the **Router: Voice Configuration** page, select the voice profile (**singtel1** or **singtel2**) you want to edit or set up.
- On the **Line Configuration** tab, click **Line 1** or **Line 2** and then select the **Enable This Line** checkbox. This activates the line for use.
- Enter the **Phone Number**, **Username**, and **Password** provided by the Internet Service Provider in the corresponding text boxes.
- Click **Save Current Profile**. Click **OK** in the confirmation window that pops up.
- The page refreshes and status of the phone line along with a refresh button displays next to the **Enable This Line** checkbox:
 - **Inactive or registering**: Click the refresh button after some time. If the problem persists, verify the details you entered and try again.
 - **Registration error**: The phone lines have not been registered successfully. Verify the details you entered and try again.
 - **Registered**: The phone lines have been registered successfully.

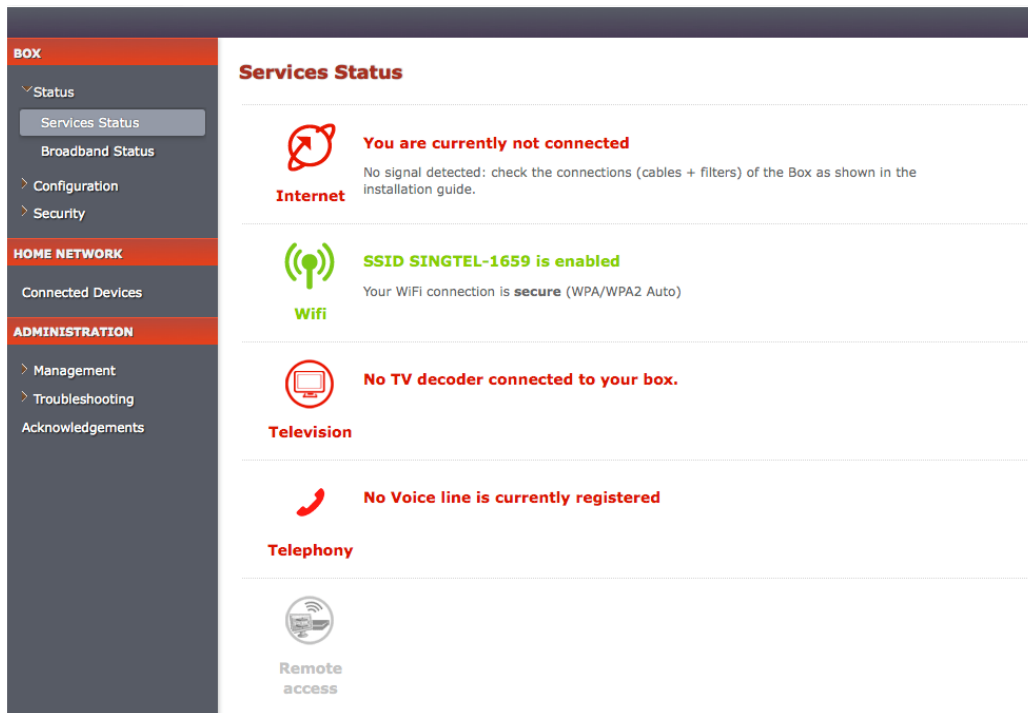


After you successfully register your phone lines, you can click the **Line Statistics** tab to view detailed information such as the number of incoming and outgoing calls, duration of calls, etc.



Displaying the activated services

Under the **Box** heading, click **Status**, and then click **Services Status**. This interface will allow you to view the services that are currently activated on your gateway.



Displaying the broadband status

Under the **Box** heading, click **Status**, and then click **Broadband Status**. This interface will allow you to view the connectivity status, Internet connection details, and traffic statistics.

The following is an example of the **Broadband Statistics** page when the physical link is set to ADSL. For information on how to configure the physical link, see the “Configuring your broadband Internet access” section on page 3.

BOX

Status

Services Status

Broadband Status

Configuration

Security

HOME NETWORK

Connected Devices

ADMINISTRATION

Management

Troubleshooting

Acknowledgements

Broadband Statistics

Available WAN Interfaces

INTERNET

IPTV

VOIP

MGMT

Connectivity

IP Connectivity: Not Connected
DSL Link: Idle

Connection Details

Broadband Link Type: Built in modem - ADSL
Connection Type: DHCP
IP Address: 0.0.0.0
Subnet Mask: 0.0.0.0
Default Gateway: 0.0.0.0
Primary DNS: 0.0.0.0
Secondary DNS: 0.0.0.0
Host Name: app
Domain: singnet.com.sg
MAC Address: 06:0c:c3:51:6c:65
MTU: 1500

Traffic Statistics

| IP Traffic | Bytes | Packets | Errors |
|------------------|-------|---------|--------|
| Transmit: | 0 | 0 | 0 |
| Receive: | 0 | 0 | 0 |

DSL Details

| DSL Statistics: | Down | Up |
|---------------------------|--------|--------|
| Max Rate: | 0 Kbps | 0 Kbps |
| Noise Margin: | 0 dB | 0 dB |
| Attenuation: | 0 dB | 0 dB |
| Output Power: | 0 dBm | 0 dBm |
| Interleave Delay: | 0 ms | 0 ms |
| Impulse Noise Protection: | 0 | 0 |

DSL Details:

Protocol: Unavailable
Channel: Interleaved
DSLAM Vendor Information:
ATM PVC: 0/100
Potential Missing Phone Filter: undetected

DSL Link Errors

| | Since Reset | Current 24-hr Int | Current 15-min Int | Since Last Event |
|----------------------------|-------------|-------------------|--------------------|------------------|
| ATM | | | | |
| Cell Header Errors: | 0 | 0 | 0 | 0 |
| DSL | | | | |
| Loss of Framing Failures: | 0 | 0 | 0 | 0 |
| Cum. Seconds w/Errors: | 0 | 0 | 0 | 0 |
| Cum. Sec. w/Severe Errors: | 0 | 0 | 0 | 0 |
| DSL Unavailable Seconds: | 4294928666 | 4294928666 | 747 | 0 |
| CRC Errors: | 0 | 0 | 0 | 0 |
| FEC Errors: | 0 | 0 | 0 | 0 |

[Home](#)

The following is an example of the **Broadband Statistics** page when the physical link is set to Ethernet.

The screenshot displays the 'Broadband Statistics' page. On the left is a navigation sidebar with sections: 'BOX' (containing Status, Services Status, Broadband Status, Configuration, and Security), 'HOME NETWORK' (containing Connected Devices), and 'ADMINISTRATION' (containing Management, Troubleshooting, and Acknowledgements). The 'Broadband Status' item is selected. The main content area is titled 'Broadband Statistics' and includes tabs for 'INTERNET', 'IPTV', 'VOIP', and 'MGMT'. Below the tabs, it shows 'IP Connectivity: Not Connected'. The 'Connection Details' section lists: Broadband Link Type: Ethernet; Connection Type: DHCP; IP Address: 0.0.0.0; Subnet Mask: 0.0.0.0; Default Gateway: 0.0.0.0; Primary DNS: 0.0.0.0; Secondary DNS: 0.0.0.0; Host Name: app; Domain: singnet.com.sg; MAC Address: 06:0c:c3:51:6c:65; MTU: 1500. The 'Traffic Statistics' table shows 15746 bytes transmitted and 0 received. A 'Home' button is located at the bottom center.

Broadband Statistics

Available WAN Interfaces

INTERNET IPTV VOIP MGMT

Connectivity

IP Connectivity: Not Connected

Connection Details

Broadband Link Type: Ethernet
Connection Type: DHCP
IP Address: 0.0.0.0
Subnet Mask: 0.0.0.0
Default Gateway: 0.0.0.0
Primary DNS: 0.0.0.0
Secondary DNS: 0.0.0.0
Host Name: app
Domain: singnet.com.sg
MAC Address: 06:0c:c3:51:6c:65
MTU: 1500

Traffic Statistics

| IP Traffic | Bytes | Packets | Errors |
|------------|-------|---------|--------|
| Transmit: | 15746 | 55 | 0 |
| Receive: | 0 | 0 | 0 |

[Home](#)

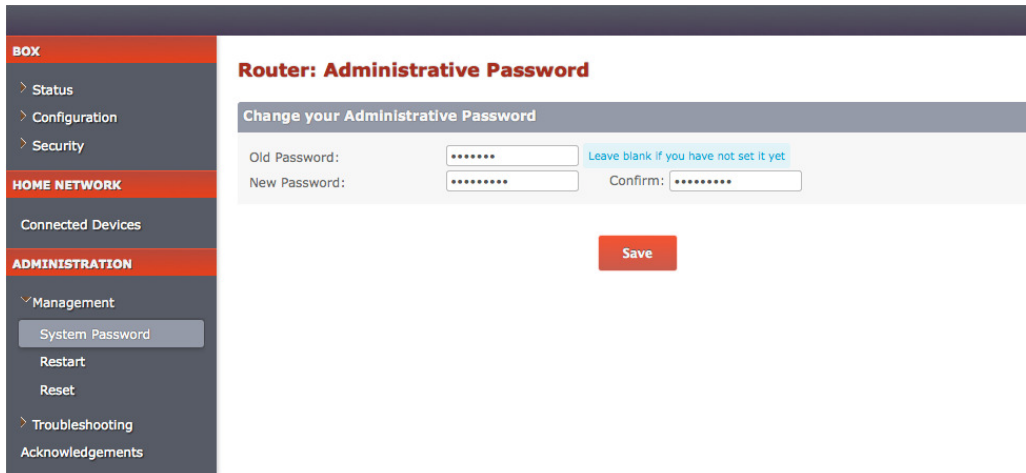
Displaying the devices connected to your gateway

To display the devices connected to your gateway, click **Connected Devices** under the **Home Network** heading. The devices that are currently connected and active are shown in green, whereas the devices that are not currently connected but have been part of your network are shown in red. You can view more information (such as IP address, MAC address, etc.) about the connected devices by hovering your mouse pointer over the hostname.



Creating system password

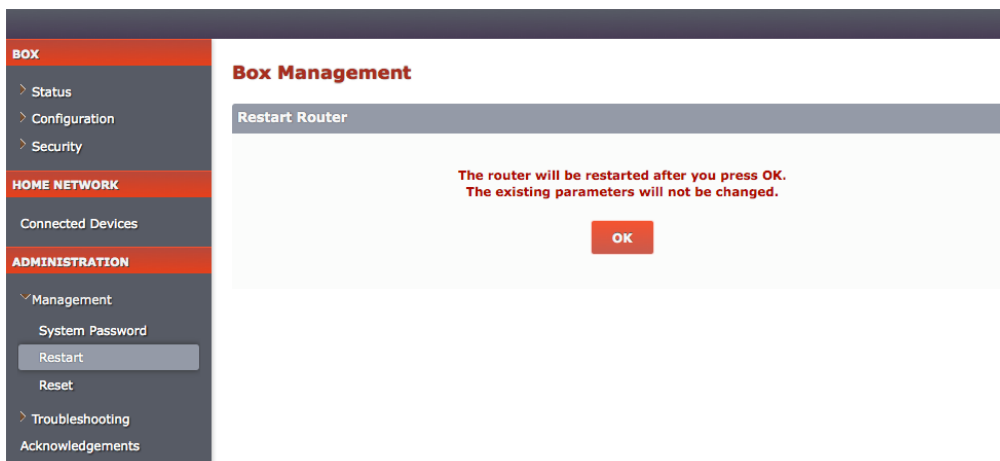
To set or change your gateway's administrative password, click **System Password** under the **Management** heading. Note that the password is case-sensitive and must have at least 8 alpha-numeric characters. You can also include any of the following symbols: \$ @ ! | & { } \ / ?



The screenshot shows the 'Router: Administrative Password' page. On the left is a navigation menu with sections: BOX (Status, Configuration, Security), HOME NETWORK (Connected Devices), and ADMINISTRATION (Management, System Password, Restart, Reset, Troubleshooting, Acknowledgements). The 'System Password' option is highlighted. The main content area is titled 'Change your Administrative Password' and contains three input fields: 'Old Password', 'New Password', and 'Confirm'. A blue link 'Leave blank if you have not set it yet' is next to the 'Old Password' field. A red 'Save' button is centered below the fields.

Restarting your gateway

To restart your gateway, click **Restart** under the **Management** heading. Your settings will be saved.



The screenshot shows the 'Box Management' page. The navigation menu is similar to the previous screenshot, but 'Restart' is highlighted. The main content area is titled 'Restart Router' and contains a confirmation message: 'The router will be restarted after you press OK. The existing parameters will not be changed.' A red 'OK' button is centered below the message.

Restoring the factory settings

To force your gateway to return to its original factory settings, click **Reset** under the **Management** heading. All your gateway settings will then be lost.

The screenshot shows the 'Box Management' section of a gateway's web interface. On the left is a navigation menu with categories: BOX, HOME NETWORK, and ADMINISTRATION. Under ADMINISTRATION, 'Management' is expanded, and 'Reset' is highlighted. The main content area is titled 'Factory Reset' and contains a yellow warning triangle icon. To the right of the icon is a red text warning: 'The router will be reseted to its factory settings after you press OK. All your changes will be lost !'. Below the warning is a red 'OK' button.

Displaying diagnostic information

To view detailed diagnostic information about your gateway and Internet connection, click **Box Diagnostics** under the **Troubleshooting** heading.

The screenshot shows the 'Box Diagnostics' page. The left navigation menu is the same as in the previous screenshot, but 'Troubleshooting' is expanded and 'Box Diagnostics' is highlighted. The main content area is titled 'Box Diagnostics' and contains several sections:

- Navigation links:** » Box Data, » Connection Status, » Box Configuration, » WiFi Interface, » Ethernet Interfaces
- Box Data:**

| | |
|--------------------|----------------------------|
| Product Name | xDSL CPE Software |
| Software Version | B41003-Singtel-RC7-54572 |
| Serial Number | 220000053361659 |
| Time Since Startup | 00 day 01 hours 49 minutes |
- Connection Status:**

| | |
|---------------------------------------|----------------------------|
| ADSL Synchronisation | Not Applicable |
| Ethernet Link | Connected |
| Access to Remote Server (BAS) | Server Available |
| PPP Session | --- |
| WAN Connected | No Connection Established |
| Uptime of Current Internet connection | 00 day 00 hours 00 minutes |
| Data Rate | Not Applicable |
| IP Address | --- |
| DNS Server | --- |
- Box Configuration:**

| | |
|-------------|-----------------------|
| DHCP Server | Enabled |
| Firewall | Normal Security Level |
| DMZ | Disabled |
- Interfaces:**

| | |
|---------------------|---------------|
| Wireless: | |
| Status | Enabled |
| Network Name (SSID) | SINGTEL-1659 |
| Mode | Auto |
| Channel | Auto |
| Authentication Mode | WPA/WPA2 |
| Option | Auto |
| Ethernet: | |
| Ethernet 1 | Not Connected |
| Ethernet 2 | 1000baseT-FD |

Using built-in IP utilities

You can use the inbuilt IP utilities such as ping, traceroute, and dnsquery to determine if there are any communication issues between your gateway and the host/Internet.

To access these utilities:

- Under the **Administration** heading, click **Troubleshooting**, and then click **IP Utilities**.
- Select the test you want to run from the **Test Type** drop-down list:
 - If you select **ping**, you can test whether a particular host is reachable across an IP network. In addition, you can self-test the network interface card of your gateway or use the tool for latency test.
 - If you select **traceroute**, you can determine the route taken by the data packets across an IP network.
 - If you select **dnsquery**, you can test if your gateway is resolving domain names to IP addresses.
- Enter the IP address of the destination in the **Host Address** text box.
- Click **Start** or **Stop** testing. You can view the results in the **Test Results** text box.
- To clear previous test logs, click **Clear Results**.

IP Utilities & tests

Select a test to run

Test Type: ping

Host Address:

Test Depth: 30 Times or Hops

Packet Size: 64 Bytes (Max 576)

Test Results:

Start Stop Clear Results