



**300M Extreme High Power Wireless-N Router**



**User Manual**

Ver.: 1.0.0

## **FCC STATEMENT**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not in-stalled and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note:** This device must more than 20cm away from human body when using.

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## Chapter 1 Product Overview

**iBall Baton 300M eXtreme High Power Wireless-N Router (iB-WRX300NP) complies with IEEE 802.11 b/g/n wireless standards.**

- MIMO Technology - Wireless data transmission speed up to 300Mbps
- Broadband Internet (Cable /DSL) - Configure internet through (RJ45) WAN port
- WISP Internet - Configure Internet through wireless mode
- Operation Mode - AP Router / Universal Repeater / WDS
- 5dBi x 2 Omni-directional Antenna
- Easy Setup Wizard Utility helps users to configure the router easily.

### 1.1 Package Contents

The following items should be found in your package:

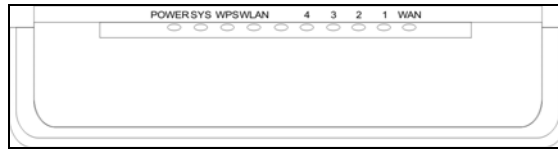
- 300M MIMO Wireless-N Router
- DC Power Adapter
- Patch Cord
- 
- Resource CD for 300M eXtreme High Power Wireless-N Router, including Easy Setup Wizard, Other Helpful Information

### Conventions

The Router or iB-WRX300NP mentioned in this guide stands for iBall Baton 300M eXtreme High Power Wireless-N Router without any explanation.

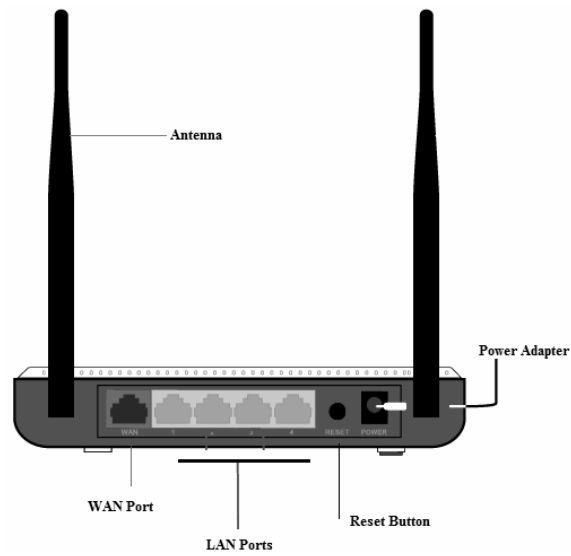
## 1.2 Panel Overview

### LED overview:



<i>Status</i>	<i>LED Status</i>	<i>Description</i>
Power	Red	Router is power ON
SYS	Green	Router is working properly
WPS	Green	WPS function is activated, LED will keep on about 2 minutes
WLAN	Blue	Device linked to the corresponding port but there is no activity
LAN	Green	RJ45 cable is plugged, and Ethernet connection is established
	Green in flash	Data access
WAN	Red	RJ45 cable is plugged, and Ethernet connection is established.
	Red in flash	Data access

### Port/Button Overview:

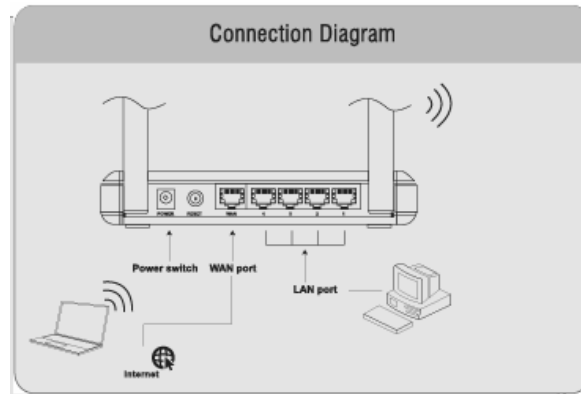


Port/Button	Description
WAN	Internet port connecting to a DSL/Cable modem or ISP directly
LAN	For connection to a computer or router.
RESET	Pressing this button for 7 seconds restores the device to factory default settings.
PWR	Kindly use bundled power adapter to avoid hardware failure

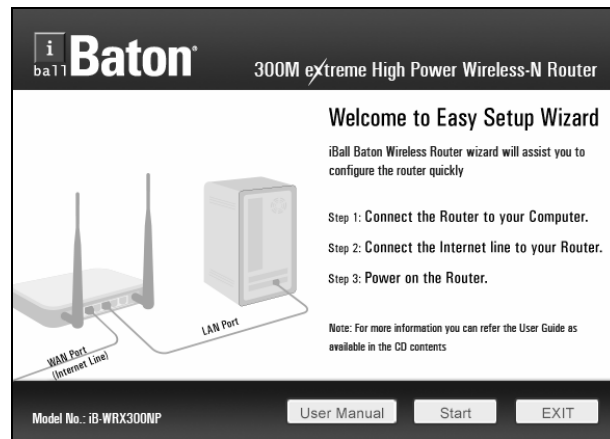


## Chapter 2 Installation

1. Connect one end of the included power adapter to the router and then plug the other end into a wall outlet nearby.
2. Connect the LAN port on the Router to the NIC port on your PC using an Ethernet cable.
3. Connect the WAN port on the Router to an Internet-enabled Cable/xDSL modem using an Ethernet cable.



4. Insert the included "Easy Setup Wizard" CD-ROM into your PC's drive, click "Setup.exe" if the program does not run automatically and follow onscreen instructions to complete settings. Or directly launch a web browser and configure the router on web based utility (For details, refer to chapter 3).



As you click on **Start** button router web page will open <http://192.168.1.1>

Login to the router interface by inserting default password: **admin** & click on OK.

## Chapter 3 Internet Connection Setup

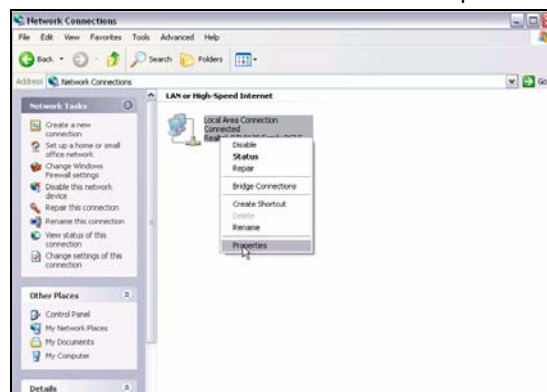
### 3.1 Configure your PC's TCP/IP Settings

If you are using Windows XP operating system, do as follows.

1. Right click "My Network Places" and select "Properties".

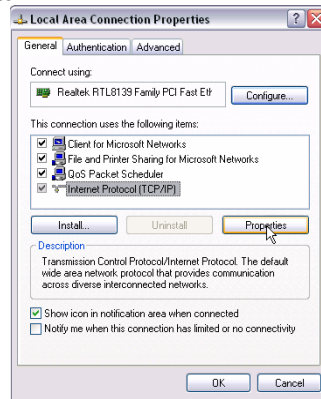


2. Right click "Local Area Connection" and select "Properties"



3. Select "Internet Protocol (TCP/IP)" on the appearing window and

click "Properties" button.




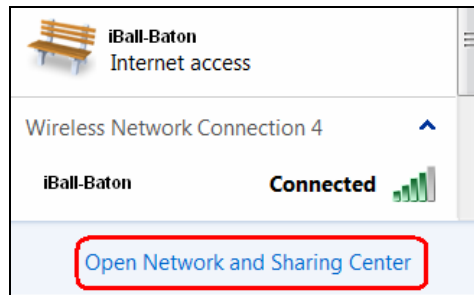
4. Select "Use the following IP address"

- **IP address:** Enter 192.168.1.xxx (xxx can be any value from 2~254).
  - **Subnet mask:** Enter 255.255.255.0.
  - **Default gateway:** Enter 192.168.1.1.
  - **Preferred DNS server:** Enter 192.168.1.1 in case that you don't know the local DNS server address (Or contact your ISP for help).
- At last, click OK to save your settings.

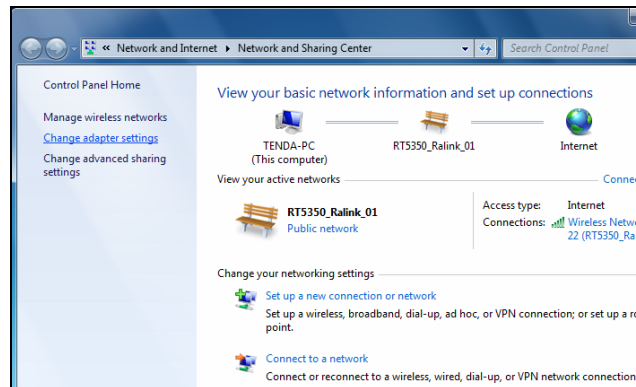


If you are using Windows 7 operating system, do as follows:

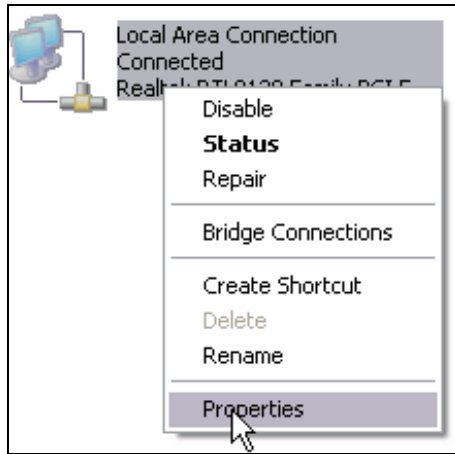
1. Right click network icon  on your desktop and then click the "Open Network and Sharing Center".



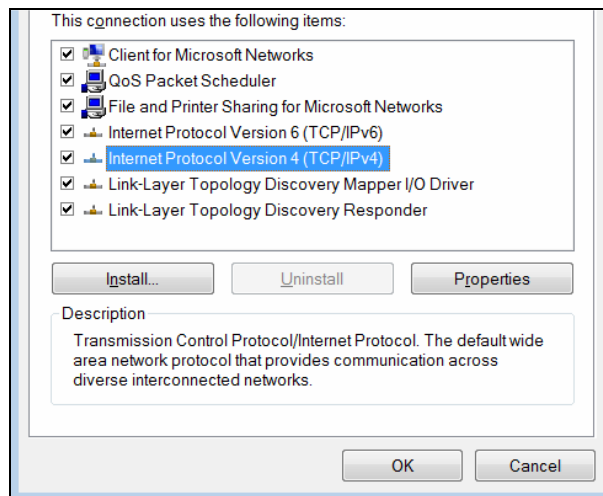
2. Click "Change adapter settings".



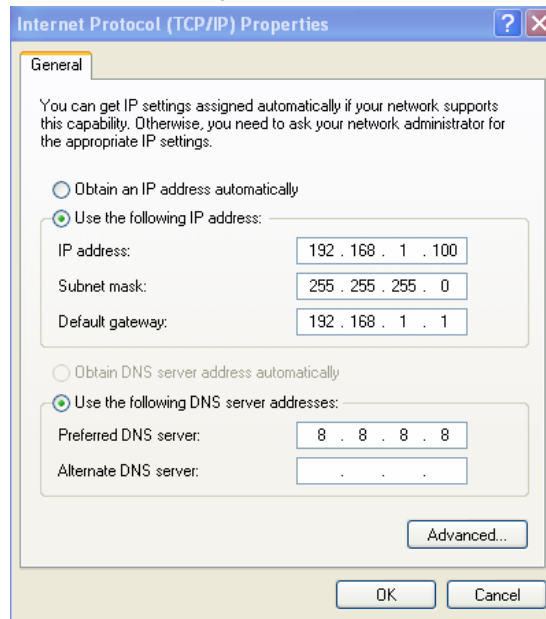
3. Right click "Local Area Connection" and select "Properties"



4. Select "Internet Protocol (TCP/IP)" on the appearing window and click "Properties" button.



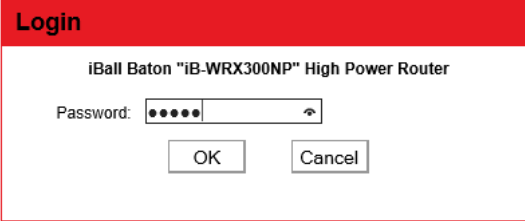
5. Select "Use the following IP address"



- **IP address:** Enter 192.168.1.xxx (xxx can be any value from 2~254).
  - **Subnet mask:** Enter 255.255.255.0.
  - **Default gateway:** Enter 192.168.1.1.
  - **Preferred DNS server:** Enter 192.168.1.1 in case that you don't know the local DNS server address (Or contact your ISP for help).
- At last, click OK to save your settings.


### 3.2 Login to Router

1. Open a web browser; enter [http:// 192.168.1.1](http://192.168.1.1) in the address bar to access router web based



The image shows a login window titled "Login" with a red header. Below the header, the text "iBall Baton 'iB-WRX300NP' High Power Router" is displayed. Underneath, there is a "Password:" label followed by a text input field containing five black dots and a small eye icon to its right. At the bottom of the window, there are two buttons: "OK" and "Cancel".

Type password and then press "Enter" to go to interface below:



The image shows a configuration window with two sections. The top section is titled "WAN Setup" and contains the text "WAN Connection Type:  DHCP  PPPoE". Below this, it says "For other connection types, click '[Network Settings](#)'". The bottom section is titled "Wireless Security Setup" and contains the text "Security Key: ". Below the input field, it says "(Default Security Key:12345678)". At the bottom of the window, there are two buttons: "OK" and "Cancel".

### 3.3 Quick Internet Connection Setup

There are 2 Internet connection types on this screen, PPPoE and Dynamic IP (DHCP).



### PPPoE

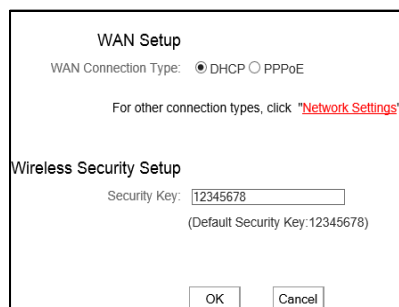
Select PPPoE, if your ISP are using a PPPoE connection and enter the PPPoE user name and password provided by your ISP. Then setup a wireless security key on the interface below to secure your wireless network. At last, click the OK button to save your settings.



The screenshot shows a 'WAN Setup' dialog box. At the top, it says 'WAN Connection Type:  DHCP  PPPoE'. Below this are two text input fields: 'User Name:' and 'Password:'. A red link labeled 'Network Settings' is visible. Underneath, there is a 'Wireless Security Setup' section with a 'Security Key:' field containing '12345678' and a note '(Default Security Key:12345678)'. At the bottom are 'OK' and 'Cancel' buttons.

### Dynamic IP

Select Dynamic IP if your ISP does not give you any IP information or account information.



The screenshot shows a 'WAN Setup' dialog box. At the top, it says 'WAN Connection Type:  DHCP  PPPoE'. Below this is a red link labeled 'Network Settings'. Underneath, there is a 'Wireless Security Setup' section with a 'Security Key:' field containing '12345678' and a note '(Default Security Key:12345678)'. At the bottom are 'OK' and 'Cancel' buttons.

- The default Internet connection type is PPPoE.

Contact your ISP if you are not clear about the PPPoE user name and password.

- Go to Chapter4 > WAN Settings, if you are using an Internet connection type other than the above- mentioned.

### 3.4 Quick Wizard

Use the interface below to fast secure your wireless network (Only a catchy security key is required) or go to Advanced (click the "Advanced" tab on the upper right corner)–Wireless--Security Settings for more settings (Apart from the security key option, you can select a security mode and a cipher type that best fit yourself or keep the defaults thereof unchanged. Detailed settings for the latter option, refer to Section 5.2 hereof).

The interface below allows you to setup a wireless password (security key) that consists of 8 characters only. The password is preset to 12345678 with WPA-PSK AES encryption by default; you can change it to whatever catchy phrase of 8 characters only.

**WAN Setup**

WAN Connection Type:  DHCP  PPPoE

For other connection types, click "[Network Settings](#)"

**Wireless Security Setup**

Security Key:

(Default Security Key: 12345678)

## Chapter 4. Network Settings

### 4.1 Status Info

This section allows you to view the router's WAN and system information.

WAN status:	
Connection status	Disconnected
WAN IP	
Subnet Mask	
Gateway	
Primary DNS	
Secondary DNS	
Connection type	Dynamic IP
Connection time	00:00:00
<input type="button" value="Release"/>	<input type="button" value="Refresh"/>

- **Connection Status:** Displays WAN connection statuses: Disconnected, Connecting or Connected.

**Disconnected:** Indicates that the Ethernet cable from your ISP side is not / not correctly connected to the WAN port on A5 or A5 is not logically connected to your ISP.

**Connecting:** Indicates that the WAN port is correctly connected and is requesting an IP address from your ISP.

**Connected:** Indicates that has been connected to your ISP.

- **WAN IP:** Displays WAN IP address.
- **Subnet Mask:** Displays WAN subnet mask.
- **Gateway:** Displays WAN gateway address.
- **Primary DNS:** Displays WAN primary DNS address.
- **Secondary DNS:** Displays WAN secondary DNS address.
- **Connection Type:** Displays current Internet connection type.

System status:	
LAN MAC address	C8:3A:35:20:5B:10
WAN MAC address	C8:3A:35:20:5B:10
System time	2011-04-01 00:55:44
Running time	00:55:44
Connected client	1
Firmware Version	V1.0.0
Hardware version	V3.0

- **LAN MAC Address:** Displays router's LAN MAC address.
- **WAN MAC Address:** Displays router's WAN MAC address.
- **System Time:** Displays the time when system is updated.
- **Connected client:** Displays the number of connected computers (which obtains IP addresses from the device' DHCP server).
- **Software Version:** Displays router's firmware version.
- **Hardware Version:** Displays router's hardware version.

#### 4.2 WAN

There are 5 Internet connection types available for your selection: PPPoE, Static IP, Dynamic IP, PPTP and L2TP. Select your Internet connection type and follow corresponding instructions below:

##### 4.2.1 PPPoE

Select PPPoE, if your ISP are using a PPPoE connection and provide you with PPPoE user name and password information.

Connection Type	PPPoE
User Name	<input type="text"/>
Password	<input type="password"/>
MTU Size (in bytes)	1492 (DO NOT modify it unless necessary, the default is 1492)
Service name	<input type="text"/> (Don't enter the information unless necessary.)
AC Name	<input type="text"/> (Don't enter the information unless necessary.)
Select the corresponding connection mode according to your situation.:	
<input checked="" type="radio"/>	Connect Automatically
<input type="radio"/>	Connect on Demand
Max.idle time	60 (60-3600 Second)
<input type="radio"/>	Connect Manually
<input type="radio"/>	Connect on Time-based
Note: The "Connect on Time-based" function goes into effect only when you have set the current time in "Time Settings" from "Maintenance".	
Connection time: from	0 hours 0 minutes to 0 hours 0 minutes
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

- **Connection Type:** Displays current Internet connection type.
- **User Name:** Enter the user name provided by your ISP.
- **Password:** Enter the password provided by your ISP.
- **MTU:** Maximum Transmission Unit. DO NOT change it from the factory default of 1492 unless necessary. You may need to change it for optimal performance with some specific websites or application software that cannot be opened or enabled; in this case, try 1450, 1400, etc.
- **Service Name:** Description of PPPoE connection. Leave blank unless necessary.
- **AC Name:** Description of server. Leave blank unless necessary.
- **Connect Automatically:** Connects automatically to the Internet upon device startup or disconnection from the Internet.
- **Connect Manually:** Users need to connect the device to Internet manually upon disconnection from the Internet.
- **Connect on Demand:** Connects to Internet automatically upon traffic present.
- **Connect on Fixed Time:** Connects to Internet automatically within the specified time length.



**Note:**

To activate the "Connect on Fixed Time" feature, you must first configure current time on the "Time Settings" screen under "System Tools" menu.

#### 4.2.2 Static IP

If your ISP offer you static IP Internet connection type, select “Static IP” from Mode drop-down menu and then enter IP address, subnet mask, Primary DNS and secondary DNS information provided by your ISP into corresponding fields.

Connection Type	Static IP
IP address	0.0.0.0
Subnet Mask	0.0.0.0
Default Gateway	0.0.0.0
Primary DNS	
Secondary DNS	(Optional)
MTU Size (in bytes)	1500 (DO NOT modify it unless necessary, the default is 1500)
Save Cancel	

- **Connection Type:** Displays the current Internet connection type.
- **IP Address:** Enter the WAN IP address provided by your ISP. Inquire your ISP if you are not clear.
- **Subnet Mask:** Enter WAN Subnet Mask provided by your ISP. The default is 255.255.255.0.
- **Default Gateway:** Enter the WAN Gateway provided by your ISP.
- **Primary DNS:** Enter the necessary DNS address provided by your ISP.
- **Secondary DNS:** Enter the secondary DNS address if your ISP provides, and it is optional.
- **MTU:** Maximum Transmission Unit. DO NOT change it from the factory default of 1500 unless necessary. You may need to change it for optimal performance with some specific websites or application software that cannot be opened or enabled.

#### 4.2.3 Dynamic IP

Select this option if your ISP does not give you any IP information or account information. You don't need to configure any settings for this connection.

Connection Type **Dynamic IP** ▼  
MTU Size (in bytes)  (DO NOT modify it unless necessary, the default is 1500)

- **MTU:** Maximum Transmission Unit. DO NOT change it from the factory default of 1500 unless necessary. You may need to change it for optimal performance with some specific websites or application software that cannot be opened or enabled.

#### 4.2.4 PPTP:

Connection Type **PPTP** ▼  
PPTP Server address   
User Name   
Password   
MTU Size (in bytes)   
Address mode **Dynamic** ▼  
IP address   
Subnet Mask   
Gateway

- **Connection Type:** Displays the current Internet connection type.
- **PPTP Server address:** Enter the IP address of a PPTP server.
- **Username/Password:** Enter Username/Password given by the PPTP server.
- **MTU:** Maximum Transmission Unit. DO NOT change factory default value unless necessary. However you may need to change it for optimal

performance with some specific websites or application software that cannot be opened or enabled; in this case, try 1450, 1400, etc.

- **Address mode:** Select “Dynamic” if you don’t get any IP information from the PPTP server, otherwise select “Static”.
- **IP address:** Enter the IP address information provided by your ISP (PPTP server). Inquire your local ISP if you are not clear (Static IP address mode only).
- **Subnet mask:** Enter the subnet mask provided by your ISP, normally, 255.255.255.0 (Static IP address mode only).
- **Gateway:** Enter the gateway provided by your ISP (Static IP address mode only). Inquire your local ISP if you are not clear.

#### 4.2.5 L2TP

The screenshot shows a configuration window for L2TP. The 'Connection Type' is set to 'L2TP'. The 'L2TP Server address' field is empty. The 'User Name' and 'Password' fields are also empty. The 'MTU Size (in bytes)' is set to 1452. The 'Address mode' is set to 'Dynamic'. The 'IP address', 'Subnet Mask', and 'Gateway' fields are all set to 0.0.0.0. There are 'Save' and 'Cancel' buttons at the bottom right.

- **Connection Type:** Displays the current Internet connection type.
- **L2TP Server address:** Enter the IP address of a L2TP server.
- **Username/Password:** Enter Username/Password specified by the PPTP server.
- **Address mode:** Enter the IP address information provided by your ISP (PPTP server). Inquire your local ISP if you are not clear (Static IP address mode only).
- **IP address:** Enter the IP address information provided by your ISP

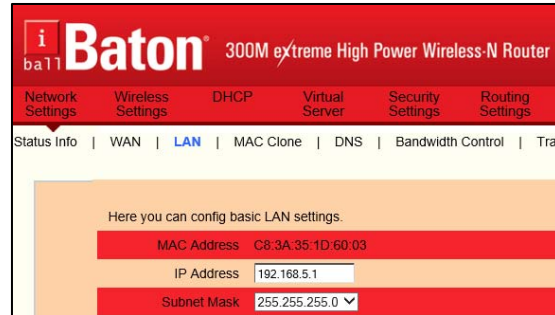


(PPTP server). Inquire your local ISP if you are not clear (Static IP address mode only).

- **Subnet mask:** Enter the subnet mask provided by your ISP, normally, 255.255.255.0 (Static IP address mode only).
- **Gateway:** Enter the gateway provided by your ISP (Static IP address mode only). Inquire your local ISP if you are not clear.

### 4.3 LAN

Click “Advanced Settings”----“LAN Settings” to enter the interface below.



- **LAN MAC Address:** Displays the router's LAN MAC address, which cannot be changed.
- **IP Address:** The default LAN IP address for this router is 192.168.1.1. You can change it according to your need.
- **Subnet Mask:** Enter the Router's LAN subnet mask. The default value is 255.255.255.0.

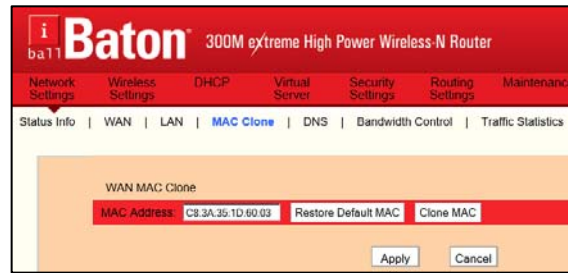


**Note:**

If you change the device's LAN IP address, you must enter the new one in your browser to get back to the web-based configuration utility. And LAN PCs' gateway must be set to this new IP for successful Internet connection.

#### 4.4 MAC Clone

This section allows you to configure router's WAN MAC address. Some ISP may require binding an accepted MAC address for communication



- **MAC Address:** Configure router's WAN MAC address.
- **MAC Address Clone:** Clicking this button changes router's WAN MAC address from default to the MAC address of the PC you are currently on. Don't use this button unless your PC's MAC address is the one bound by your ISP.
- **Restore Default MAC:** Restores router's WAN MAC to default settings.

#### 4.5 DNS

The Domain Name System (DNS) is a hierarchical naming system for computers, services, or any resource connected to the Internet or a private network. It functions just as the "phone book" for the Internet by translating human-friendly domain names into numerical identifiers of IP addresses for the purpose of locating and addressing these devices worldwide.



- **DNS Setting:** Check the box to enable DNS settings.
- **Primary DNS:** Enter the DNS server address provided by your ISP.
- **Secondary DNS:** Enter the secondary DNS address if your ISP offers you 2 DNS addresses (Optional).

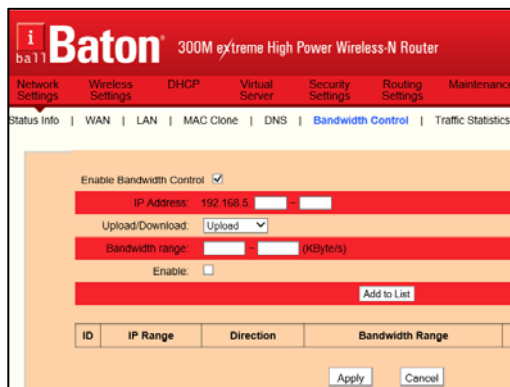


**Note:**

1. **Wrong DNS server addresses will lead to failure in accessing websites.**
2. **To activate the new settings, reboot the device.**

#### 4.6 Bandwidth Control

The bandwidth control feature can be used to simultaneously regulate traffic of up to 254 computers on your LAN network. It allows you to regulate a group of PCs' traffic by specifying a range of IP addresses.



- **Enable Bandwidth Control:** Check/uncheck the box to enable/disable bandwidth control. It is disabled by default.
- **IP Address:** Enter an IP address (same number in both boxes) or a range of IP addresses (different numbers in two boxes) of the PCs whose traffic you want to regulate.
- **Upload /Download:** You can select either to limit Uplink or Downlink Bandwidth of PCs within the specified IP range.

- **Bandwidth Control:** Maximum and minimum data flow which is permitted to be uploaded/downloaded by computers within a specified IP range. Unit is Kbytes/s. (For WAN bandwidth range, consult your ISP.)
- **Enable:** Check the box to enable current rule. The existing rule will not take effect when left unchecked.
- **Add to List:** Click it to add currently edited bandwidth control rule to the list.

**For example:** Suppose that you have a 2M WAN connection, then maximum download and upload rates in theory will be 2Mbps=256KByte/s and 512kbps=64KByte/s respectively. And you want the PC at the IP address of 192.168.1.100 to have 10-15KByte/s upload and 80-90KByte/s download rates.

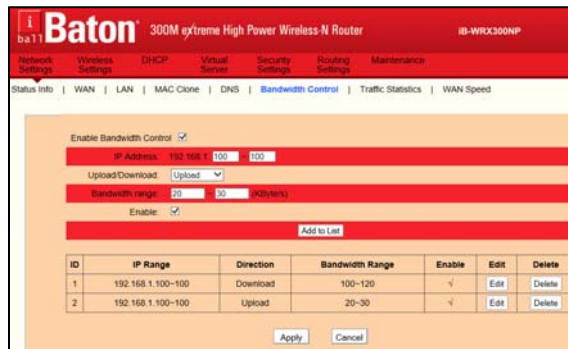
**Then do as follows:**

ID	IP Range	Direction	Bandwidth Range	Enable	Edit	Delete
1	192.168.1.100-100	Download	256-256	<input checked="" type="checkbox"/>	Edit	Delete

- Step1. Enter 192.168.1.100 in IP address boxes.
  - Step2. Select Upload from the corresponding drop-down menu.
  - Step3. Enter 10~15 in bandwidth range box
  - Step4. Check the “Enable” box.
  - Step5. Click “Add to List”.
  - Step6. Click “OK” to finish settings.
- Then, follow steps above to add a download rule.



**For example:** Supposing that you want PCs within the IP range of 192.168.1.2--192.168.1.254 to have 100-120KByte/s download rate and 20-30KByte/s upload rate, then repeat same settings shown on below screenshot on your router:



#### 4.7 Traffic Statistics

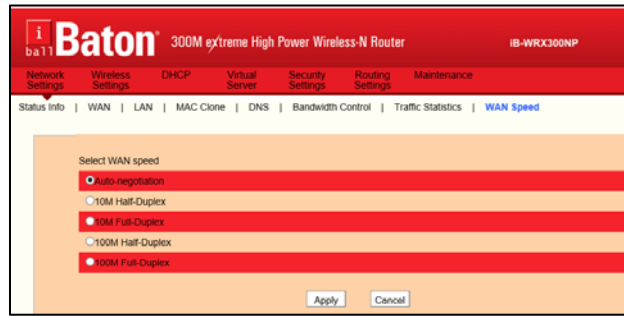
Statistics dynamically displays bandwidth usage by PCs on your LAN.

IP address	Uplink rate(KByte/s)	Downlink rate(KByte/s)	Sent message	Sent Bytes MByte	Received message	Received Bytes MByte
192.168.1.100	0.00	0.00	99	0.00	0	0.00
192.168.1.101	0.00	0.00	15	0.00	0	0.00

- **Enable Traffic Statistics:** Check the box to gather bandwidth usage by PCs on your LAN. It is disabled by default. Disabling this option may boost router's packet processing capacity. When enabled, system will dynamically renew statistics information every 5 seconds.
- **IP Address:** Displays IP address information of a corresponding statistics item.
- **Uplink Rate:** Displays how many Kbytes of data have been transmitted per second.
- **Downlink Rate:** Displays how many Kbytes of data have been received per second.
- **Sent Message (TX Packets):** Displays the total number of packets transmitted by a corresponding IP address through the router.
- **Sent Bytes:** Displays how many Mbytes of data have been transmitted by a corresponding IP address through the router.
- **Received Message (RX Packets):** Displays the total number of packets received by a corresponding IP address from the router.
- **Received Bytes:** Displays how many Mbytes of data have been received by a corresponding IP address from the router.

#### 4.9 WAN Speed

This section allows you to configure WAN speed. Default settings are recommended.



- **AUTO:** DO NOT change this default setting unless you are connecting an excessively long Ethernet cable from your ISP, which may degrade drive capability, to the router's WAN port.
- **10M HALF-duplex:** Select it if your router's WAN port does not function properly when connected to an Ethernet cable from your ISP; excessive length of the cable may degrade drive capacity of the WAN port.
- **10M FULL -duplex:** Select it to set router's WAN port to work at 10Mbps in full duplex mode, improving WAN port drive capacity.
- **100M HALF-duplex:** Select it to set router's WAN port to work at 100Mbps in half duplex mode.
- **100M FULL-duplex:** Select it to set router's WAN port to work at 100Mbps in full duplex mode.

## Chapter 5 Wireless Settings

### 5.1 Wireless Basic Settings

The screenshot displays the 'Wireless Basic Settings' page for a Baton 300M extreme High Power Wireless-N Router (model IB-WRX300NP). The page features a navigation menu at the top with options like Network Settings, Wireless Settings, DHCP, Virtual Server, Security Settings, Routing Settings, and Maintenance. The main content area includes the following settings:

- Enable Wireless:** A checked checkbox.
- Network Mode:** A dropdown menu set to 'Automatic(302 11b/g/n)'.
- Primary SSID:** A text input field containing 'Bat-Baton'.
- Secondary SSID:** An empty text input field.
- Broadcast SSID:** Radio buttons for 'Enable' (selected) and 'Disable'.
- AP Isolation:** Radio buttons for 'Enable' and 'Disable' (selected).
- Channel:** A dropdown menu set to 'AutoSelect'.
- Channel Bandwidth:** Radio buttons for '20' (selected) and '20/40'.
- Extension Channel:** A dropdown menu set to 'Auto Select'.
- WMM Capable:** Radio buttons for 'Enable' (selected) and 'Disable'.
- APSD Capable:** Radio buttons for 'Enable' (selected) and 'Disable'.

At the bottom of the settings area, there are 'Apply' and 'Cancel' buttons.

- **Enable Wireless function:** Check/uncheck to enable/disable the wireless feature. When disabled, all wireless related features will be disabled automatically.
- **Network Mode:** Network Mode: Select a right mode according to your wireless client. The default mode is 11b/g/n mixed.
- **11Mbps 11b mode:** Select it if you have only Wireless-B clients in your wireless network.
- **54Mbps 11g mode:** Select it if you have only Wireless-G clients in your wireless network.
- **Mixed b/g mode:** Select it if you have only Wireless-B and Wireless-G clients in your wireless network.
- **Automatic 11b/g/n mixed mode:** Select it if you have Wireless-B, Wireless-G and Wireless-N clients in your wireless network.
- **SSID:** A SSID (Service Set Identifier) is the unique name of a wireless network. The primary SSID is changeable and compulsory.
- **Broadcast (SSID):** Select "Disable" to hide your SSID. When disabled, no wireless clients will be able to see your wireless network when they perform a scan to see what's available. If they want to connect to your router, they will have to first know this SSID and then manually enter it on their devices. By default, this option is enabled.
- **Channel:** The Channel can be changed to fit the channel setting for an



existing wireless network or to customize the wireless network. From the drop-down list, you can select a most effective channel, which ranges from 1 to 11. You can also select "Auto Select" to let system detect and choose one that best fits your network.

- **WMM-Capable:** Enabling this option may boost transmission capacity of wireless multimedia data (such as online video play).
- **ASPD Capable:** Auto power saving mode for WMM feature, disabled by default.
- **Channel Bandwidth:** Select a proper channel bandwidth to enhance wireless performance. When there are 11b/g and 11n wireless clients, please select the 802.11n mode of 20/40M frequency band; when there are only non-11n wireless clients, select 20M frequency band mode; when the wireless network mode is 11n mode, please select 20/40 frequency band to boost its throughput.
- **Extension Channel:** Indicates the working network frequency range for 11n mode.

## 5.2 Wireless Security

This section allows you to configure wireless security settings to block unauthorized access to your wireless network and prevent malicious packet sniffing. You have 4 ways to encrypt your wireless data: WPS, WEP, WPA-PSK and WPA2-PSK.

### 5.2.1 WPS Settings

Wi-Fi Protected Setup makes it easy for home users who know little of wireless security to establish a secure wireless home network, as well as to add new devices to an existing network without entering long passphrases or configuring complicated settings. Simply enter a PIN code or press the software PBC button or hardware WPS button (if any) and a secure wireless connection is established.

Select SSID: iBall Baton

Security Mode: Disable

WPS Settings:  Disable  Enable

WPS Mode:  PBC  PIN

AP PIN Code: 43069620 Reset OOB

Note:  
Network mode will switch to 11b/g mixed automatically if WEP or TKIP is selected.  
Network Mode will switch to 11b/g/n mixed automatically if AES or TKIP/AES is selected.

Apply Cancel

- **WPS Settings:** Select to enable/disable the WPS encryption. It is enabled by default.
- **WPS Mode:** Select PBC (Push-Button Configuration) or PIN.
- **PBC:** Click this software button or directly press the hardware WPS button on both your router and the new wireless client device (that you want to connect to your router wirelessly) for 1 second to establish an easy and secure wireless connection.
- **PIN:** To use this option you must know the PIN code from the wireless client. Simply click the PIN radio button and enter client's PIN code while using the same PIN code on client side for secure connection.
- **Reset OOB:** When clicked, the WPS LED will display a solid light; the WPS function will be disabled automatically; WPS server on the Router enters idle mode and will not respond to client's WPS connection request.



**Note:**

1. If you find the WPS LED blinking for 2 minutes after you select and apply the PBC mode, it means that the PBC encryption method is successfully enabled. And an authentication will be performed between your router and the WPS/PBC-enabled wireless client device during this time; if it succeeds, the wireless client device connects to your device, and the WPS LED displays a solid light thereafter. Repeat steps mentioned above if you want to connect more wireless client devices to your router.

2. The WPS function can be implemented only between your Router and another WPS-enabled device.

#### **5.2.2 WPA-PSK**

The WPA protocol implements the majority of the IEEE 802.11i standard. It enhances data encryption through the Temporal Key Integrity Protocol (TKIP) which is a 128-bit per-packet key, meaning that it dynamically generates a new key for each packet. WPA also includes a message integrity check feature to prevent data packets from being hampered with. Only authorized network users can access the wireless network.

Wireless Basic Settings **Wireless Security** MAC Filtering Connection Status

SSID -- "iBall-Baton"

Security Mode

WPA Algorithms  AES  TKIP  TKIP&AES

Key

Key Renewal Interval  Second

WPS Settings  Disable  Enable

- **Security Mode:** Select a proper mode, which is also supported by your wireless clients, from the drop-down menu.
- **WPA Algorithms:** Select either AES (advanced encryption standard) or TKIP (temporary key integrity protocol) type.
- **Key:** Enter a security key, which must be between 8-63 ASCII characters.
- **Key Renewal Interval:** Enter a valid time period for the key.

### 5.2.3 WPA2-PSK

The later WPA2 protocol features compliance with the full IEEE 802.11i standard and uses Advanced Encryption Standard (AES) in addition to TKIP encryption protocol to guarantee better security than that provided by WEP or WPA.

### 5.2.4 WEP

WEP is intended to provide data confidentiality comparable to that of a traditional wired network. Two methods of authentication can be used with WEP: Open System authentication and Shared Key authentication.

SSID -- "iBall-Baton"

Security Mode

Default key

WEP key1

WEP key2

WEP key3

WEP key4

WPS Settings  Disable  Enable

- **WEP Key:** You can select either ASCII or Hexadecimal from the drop-down menu.
- Note:** If you select ASCII, enter 5 or 13 valid ASCII characters; or if you select Hexadecimal, enter 10 or 26 Hexadecimal characters.
- **Default Key:** Select one key from the 4 preset keys.

### 5.3 Operation Mode

Operation Mode is used to set the different wireless working mode.

#### 5.3.1 Universal Repeater

This wireless operation mode is used to extend the wireless range of main router.

Select Operation Mode Universal Repeater and click on survey button.

Select	SSID	MAC Address	Channel	Security Mode	Signal Strength
<input type="checkbox"/>	iBall-Baton	00:1E:A6:0E:B5:28	3	none	49
<input type="checkbox"/>	Supp-WRA150N(3.0)	00:1E:A6:15:DA:F8	4	none	57
<input type="checkbox"/>	iBall-Baton	00:1F:A4:93:61:C5	1	none	61

The list of available wireless network will be available then you can select one from the list. Select the SSID of the target network and click on apply. The target network SSID will be automatically filled into wireless setting. Then enter the password for the target network.

#### 5.3.2 WISP

In this mode, the device enables multiusers to share Internet from WISP. The LAN port devices share the same IP from WISP through Wireless port. While connecting to WISP, the Wireless port works as a WAN port at Wireless Client Router mode. The Ethernet port acts as a LAN port.

Operation Mode: WISP

SSID: iBall-Baton

Channel: Auto-select

Security Mode: Disable

Close Scan

Select	SSID	MAC Address	Channel	Security Mode	Signal Strength
<input type="checkbox"/>	iBall-Baton	00:1E:A6:0E:B0:2B	3	none	49
<input type="checkbox"/>	Supp-WiRA150N(3.0)	00:1E:A6:1D:DA:F8	4	none	57
<input type="checkbox"/>	iBall-Baton	00:1F:A4:93:61:C6	1	none	61

Repeat same process as for Universal Repeater

### 5.3.3 WDS Bridge Mode

To extend your existing wireless network coverage, select the WDS (Wireless Distribution System) feature.

• **AP MAC Address:** Enter the MAC address of a wireless link partner or populate this field using the Open Scan option.

**Application example:** Implement the WDS feature using 2 iB-WRX300NP wireless router labeled iB-WRX300NP-1 and iB-WRX300NP-2.

1. Change the default wireless working mode of AP on iB-WRX300NP to WDS as shown in the figure below:

Operation Mode: Bridge (WDS)

SSID: [Empty]

Channel: Auto-select

AP MAC Address: [Empty]

AP MAC Address: [Empty]

2. Add iB-WRX300NP-2's MAC address to iB-WRX300NP-1 and change iB-WRX300NP-1's SSID and channel respectively to those of iB-WRX300NP-2. (Assuming that iB-WRX300NP-2's SSID is changed to OFFICE)

a. If you already know iB-WRX300NP-2's MAC address, SSID and channel settings, then you can manually configure the same settings on iB-WRX300NP-1.

The screenshot shows the 'Wireless Basic Settings' page for the iB-WRX300NP-1 router. The page is divided into several sections:

- Enable wireless function:** A red checkbox that is checked.
- Wireless Working Mode:** Radio buttons for 'Access Point (AP)' and 'WDS Bridge'. 'WDS Bridge' is selected.
- Network Mode:** A dropdown menu set to 'Automatic(802.11b/g/h)'. Below it, the SSID is 'iBall Wi-Fi'.
- Broadcast/SSID:** Radio buttons for 'Enable' and 'Disable'. 'Enable' is selected.
- Channel:** A dropdown menu set to '2462MHz (Channel 11)'.
- Channel Bandwidth:** Radio buttons for '20' and '20/40'. '20' is selected.
- Extension Channel:** A dropdown menu set to '2442MHz (Channel 7)'.
- WMM Capable:** Radio buttons for 'Enable' and 'Disable'. 'Enable' is selected.
- APSD Capable:** Radio buttons for 'Enable' and 'Disable'. 'Disable' is selected.
- Working Mode (WDS Bridge):** A section with a red 'AP MAC address' field containing '00:3F:5D:00:0E:C8' and an empty 'AP MAC address' field below it.

b. Or you can use the Open Scan option.

1) Click the "Survey" button to display a list of available wireless networks.

The screenshot shows the 'Wireless Security' page for the iB-WRX300NP-1 router. The page is divided into several sections:

- Operation Mode:** A dropdown menu set to 'Bridge (WDS)'.
- SSID:** An empty text field.
- Channel:** A dropdown menu set to 'Auto-select'.
- AP MAC Address:** An empty text field.
- AP MAC Address:** An empty text field.
- Security Mode:** A dropdown menu set to 'Mixed WPA/WPA2 - PSK'.
- WPA Encryption Type:** Radio buttons for 'AES', 'TKIP', and 'TKIP/AES'. 'TKIP/AES' is selected.
- Security Key:** A text field containing '12345678'.
- Buttons:** 'Survey', 'Apply', and 'Cancel' buttons are located at the bottom of the page.

2) Select the iB-WRX300NP-2's SSID from the list and click OK on the appearing dialogue box; iB-WRX300NP-2's MAC address, SSID and channel settings will be automatically added to the iB-WRX300NP-1

Operation Mode: Bridge (WDS)

SSID: iBall-WRT300NP-1

Channel: 9

AP MAC Address: 10 FE ED 8F 7E 58

AP MAC Address: [Empty]

Security Mode: Mixed WPA/WPA2 - PSK

WPA Encryption Type:  AES  TKIP  TKIP&AES

Security Key: 12345678

Close Scan

Select	SSID	MAC Address	Channel	Security Mode	Signal Strength
<input checked="" type="radio"/>	iBall-WRT300NP-1	10 FE ED 8F 7E 58	9	wep/wpa	36
<input type="radio"/>	iphone 5	00 AA BB 01 23 54	13	wep/wpa	56
<input type="radio"/>	iBall Wi-Fi	00 50 11 22 11 10	6	wep/wpa	33

Apply Cancel

3) Click OK to save your settings.

4) Configure wireless security settings. For this step, refer to section 5.2 hereof.

5) Repeat steps 1-4 on iB-WRX300NP-2. After the 2 routers have added each other's MAC address and share the same SSID, channel, security settings and security key, the WDS feature can be implemented.

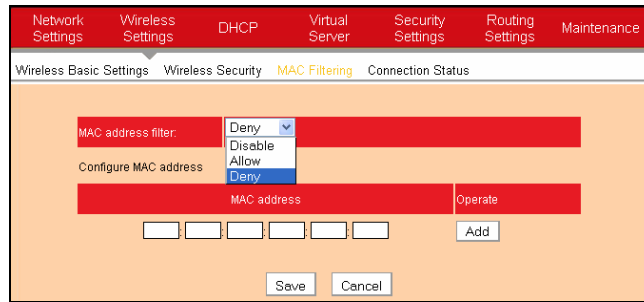
**⚠ Note:**

**1. WDS feature can be implemented only between 2 wireless devices that both support the WDS feature. Plus, SSID, channel, security settings and security key must be the same on both devices. Using the Open Scan option and selecting link partner from the scan list automatically change the router's existing SSID and channel settings respectively to those of link partner as well as add link partner's MAC address. So we recommend you to use this Open Scan option for easy WDS settings.**

**2. Using WEP encryption improves WDS compatibility. For this reason, we recommend you to encrypt your wireless network with WEP when using the WDS feature.**

#### 5.4 MAC Filtering

The MAC filtering feature can be used to allow or disallow clients to connect to your wireless network.



- **MAC Address Filter:** “Permit” means to permit PCs at specified MAC addresses to connect to your wireless network while “Forbid” means to block PCs at specified MAC addresses from connecting to your wireless network.
- **MAC Address:** Enter the MAC addresses of a wireless client and click “Add”.
- **MAC Address List:** Displays the MAC addresses added by you. You can delete any entry by clicking on the “Delete” button nearby.

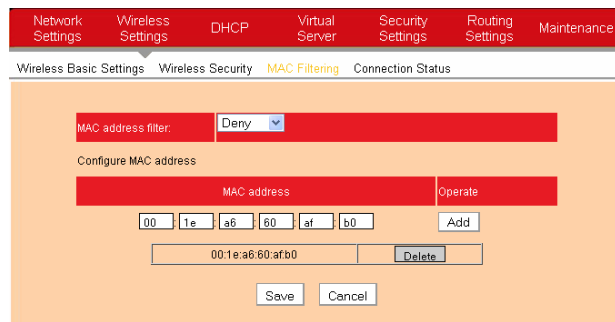
**Example 1:**

To allow only a PC at the MAC address of 00:1e:a6:a4:56:75 to connect to your wireless network, do as follows:

Step1. Select “Permit” from MAC Address Filter drop-down menu.

Step2. Enter 00:1e:a6:a4:56:75 in the MAC address box.

Step3. Click the “OK” button to save your settings and you can add more MAC addresses, if you like, simply repeating the follow steps.





**Example 2:**

To prohibit only a PC at the MAC address of 00:1e:a6:67:d4:23 from connecting to your wireless network, follow steps above and make a few necessary changes as shown follow.

Network Settings | Wireless Settings | DHCP | Virtual Server | Security Settings | Routing Settings | Maintenance

Wireless Basic Settings | Wireless Security | **MAC Filtering** | Connection Status

MAC address filter: Deny

Configure MAC address

MAC address	Operate
00:1e:a6:67:d4:23	Delete

Save | Cancel

**5.5 Connection Status**

This interface displays the information of currently connected wireless clients including MAC addresses and bandwidth.

Network Settings | Wireless Settings | DHCP | Virtual Server | Security Settings | Routing Settings | Maintenance

Wireless Basic Settings | Wireless Security | MAC Filtering | **Connection Status**

This page displays the connection information of the wireless router.

The currently connected hosts list: Refresh

NO.	MAC address	Bandwidth
-----	-------------	-----------

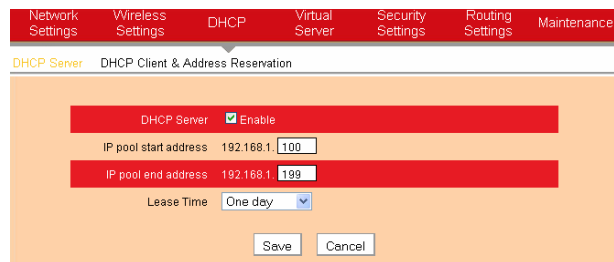
- **MAC Address:** Displays the MAC addresses of the PCs that have been wirelessly connected to your router.
- **Bandwidth:** Displays the channel bandwidth used by the currently connected hosts (connected wireless clients).

**⚠ Note: "Bandwidth" refers to the wireless channel bandwidth instead of wireless connection rate.**

## Chapter 6 DHCP

### 6.1 DHCP Settings

The Dynamic Host Configuration Protocol (DHCP) is an automatic configuration protocol used on IP networks. If you enable the built-in DHCP server on the device, it will automatically configure the parameters of TCP/IP protocol for all your LAN computers (including IP address, subnet mask, gateway and DNS etc), eliminating the need for manual intervention. Be sure to set your computers to be DHCP clients by setting their TCP/IP settings to “Obtain an IP Address Automatically”. When you turn your computers on, they will automatically load the proper TCP/IP settings provided by the device.



- **DHCP Server:** Check or uncheck the box to enable or disable the device's DHCP server feature.
- **IP pool start address:** Enter the starting IP address for the DHCP server's IP assignment.
- **IP pool end address:** Enter the ending IP address for the DHCP server's IP assignment.
- **Lease Time:** The length of time for the IP address lease. Configuring a proper lease time improves the efficiency for the DHCP server to reclaim disused IP addresses.

### 6.2 DHCP Clients & Address Reservation

This section not only displays a DHCP dynamic client list but also includes a configurable Static DHCP assignment feature.

The DHCP client list displays IP addresses assigned by the built-in DHCP server, MAC addresses, host names and lease time.

If you would like some devices on your network to always have fixed IP addresses, you can manually add a static DHCP assignment entry for each such device. You can manually add an IP address and a MAC address, and then whenever a host with this MAC address connects to the router, it will always get the same IP address (the one you just added). According to the connected computer's MAC address, the router checks relevant entries in its DHCP reservation list and decides what IP address to assign to this host (an unused IP from DHCP IP address pool, or a reserved one): If it fails in finding a reserved IP address for this MAC address in the list, it will immediately assign an unused IP from its DHCP IP address pool; and if such IP is found, it will be assigned to this host so as to ensure that host with a static DHCP assignment always get this reserved IP address.

The screenshot shows the DHCP Client & Address Reservation configuration page. The 'Static assignment' section includes an IP Address field with the value 192.168.1 and a MAC address field with a redacted value. Below this is a table with columns for NO., IP Address, MAC address, and Delete. A 'Refresh' button is located to the right of the table. At the bottom, there are 'Save' and 'Cancel' buttons.

NO.	IP Address	MAC address	Delete

Host Name	IP Address	MAC address	Lease Time
Training	192.168.1.100	00 25 D3 32 B0 E1	00:00:20

- **IP Address:** Enter the IP address for static DHCP assignment.
- **MAC Address:** Enter the MAC address of a computer to always receive the same IP address (the IP you just entered above).
- **Host name:** Displays the name of a computer (DHCP client).
- **Lease Time:** Remaining time for the corresponding IP address lease.

## Chapter 7 Virtual Server

### 7.1 Port Forwarding

NO.	Start port-End port	LAN IP	Protocol	Enable	Delete
1.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="text"/>	192.168.1. <input type="text"/>	TCP	<input type="checkbox"/>	<input type="checkbox"/>

Well-known service ports:

- **Start/End Port:** Enter the service port range provided by the mapped host in internal network.
- **LAN IP:** The IP address of the computer which is used as a server in LAN.
- **Protocol:** Includes TCP, UDP and Both. Select “Both” when you are not sure about which protocol to use.
- **Enable:** Check the “Enable” option to activate the corresponding rule.
- **Delete:** Check the “Delete” option to delete the corresponding rule.

#### For example:

You want to share some large files with your friends who are not in your LAN; however it is not convenient to transfer such large files. Then, you can set up your own PC as a FTP server and use the port forwarding feature to let your friends access these files. Provided that the static IP address of the FTP server (Namely, your PC) is 192.168.1.10 and you want your friends to access this FTP server through default port 21 and TCP protocol, then you can follow the steps below for configurations.

1. Enter 21 for both the start and end port in ID 1, or select "FTP" from "Well-Known Service Port" and port 21 will be added automatically to ID 1.

2. Enter 192.168.1.10 for the "IP Address", select "TCP" and then select "Enable".

3. The screenshot below displays the above settings.

NO.	Start port	End port	LAN IP	Protocol	Enable	Delete
1.	21	21	192.168.1.10	TCP	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
3.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
4.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
5.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
6.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
7.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
8.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
9.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>
10.			192.168.1.	TCP	<input type="checkbox"/>	<input type="checkbox"/>

Well-known service ports: FTP(21) Add to ID: 1

Save Cancel

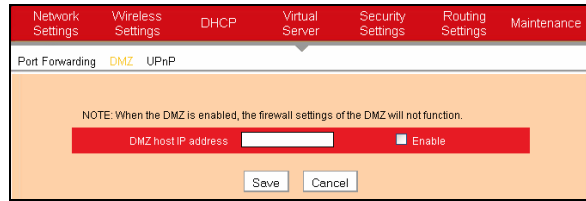
4. Click "OK".

Now, your friends only need to enter ftp://xxx.xxx.xxx.xxx:21 in their browsers to access your FTP server. xxx.xxx.xxx.xxx is the device's WAN IP address. For example, if it is 172.16.102.89, then your friends only need to enter "ftp://172.16.102.89: 21" in their browsers.

**Note:** If you include port 80 on this section, you must set the port on remote (web-based) management section to a different number than 80, such as 8080, otherwise the virtual server feature may not take effect.

## 7.2 DMZ

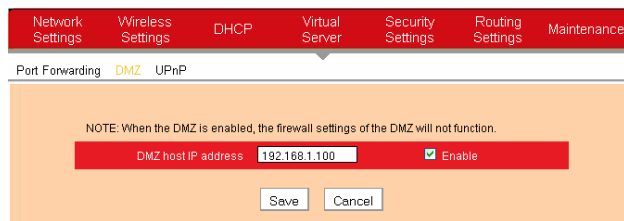
In some cases, we need to set a computer to be completely exposed to extranet for implementation of a 2-way communication. To do so, we set it as a DMZ host.



The screenshot shows a web-based configuration interface for a router. At the top, there is a navigation menu with tabs for Network Settings, Wireless Settings, DHCP, Virtual Server, Security Settings, Routing Settings, and Maintenance. Below the menu, there are three sub-tabs: Port Forwarding, DMZ, and UPnP. The DMZ tab is selected. A note reads: "NOTE: When the DMZ is enabled, the firewall settings of the DMZ will not function." Below the note, there is a red input field labeled "DMZ host IP address" which is currently empty. To the right of this field is a checkbox labeled "Enable" which is currently unchecked. At the bottom of the form, there are "Save" and "Cancel" buttons.

- **DMZ Host IP Address:** Enter the IP address of a LAN computer which you want to set to a DMZ host.
- **Enable:** Check/uncheck to enable/disable the DMZ host.

**For example:** You can set a LAN computer at the IP address of 192.168.2.10 as a DMZ Host to intercommunicate with another host on the Internet.

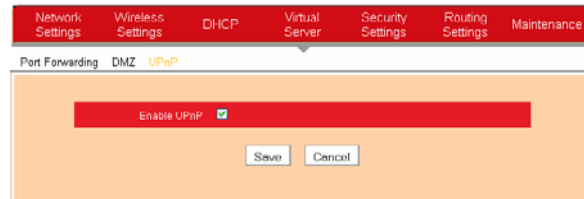


This screenshot is similar to the one above, but the "DMZ host IP address" field is now filled with the value "192.168.1.100". The "Enable" checkbox is now checked. The "Save" and "Cancel" buttons remain at the bottom.

**⚠ Note:** If you set a PC to a DMZ host, it will be completely exposed to extranet and gains no more protection from the device firewall.

### 7.3 UPnP

UPnP (Universal Plug and Play) allows a network device to discover and connect to other devices on the network. With this feature enabled, hosts in LAN can request the device to perform special port forwarding so as to enable external hosts to access resources on internal hosts.



- **Enable UPnP:** Check/uncheck to enable/disable the UPnP feature.

**⚠ Note:** UPnP works in Windows XP, Windows ME or later (NOTE: Operational system needs to be integrated with or installed with Directx 9.0) or in an environment with installed application software that supports UPnP.

## Chapter 8 Security Settings

### 8.1 IP Address Filtering

To better manage the computers in LAN, you can regulate LAN computers' access to certain ports on Internet using Client Filter functionality.

The screenshot displays the 'IP Address Filtering' configuration page. At the top, there is a navigation bar with tabs for 'Network Settings', 'Wireless Settings', 'DHCP', 'Virtual Server', 'Security Settings' (which is active), 'Routing Settings', and 'Maintenance'. Below this, there is a sub-menu with 'IP Address Filtering' selected, along with 'MAC Address Filtering', 'URL Filtering', and 'Remote Management'. The main configuration area contains several fields: 'Filter Mode' set to 'Allow', 'Access Policy' set to '(1)', 'Remark' (empty), 'Start IP' and 'End IP' both set to '192.168.1', 'Port' (empty), 'Type' set to 'TCP', 'Time' set to '0:00 - 0:00', 'Day' set to 'Sunday' and 'Saturday', and an 'Enable' checkbox that is checked. There is also a 'Clear this item' button and 'Save' and 'Cancel' buttons at the bottom.

- **Filter Mode:** Select Forbid only or Permit only according to your own needs.
- **Access Policy:** Select a number (indicating a filter rule) from the drop-down menu.
- **Remark:** Enter a meaningful name to yourself for a new filter rule.
- **Start /End IP Address:** Enter a starting/ending IP address.
- **Port:** Enter TCP/UDP protocol port number (s); it can be a range of ports or a single port.
- **Type:** Select a protocol or protocols for the traffic (TCP/UDP/Both).
- **Time:** Select a time range for the rule to take effect.
- **Day:** Select a day or several days for the rule to take effect.
- **Enable:** Check to enable or uncheck to disable a corresponding filter rule (allow/disallow matched packets to pass through router).



**Example 1:** To prohibit PCs within the IP address range of 192.168.1.100 -- 192.168.1.120 from accessing Internet from Monday to Friday, do as follows:

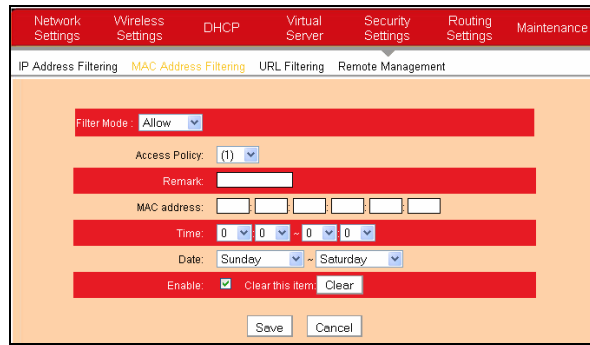
The screenshot shows the 'IP Address Filtering' configuration page. The 'Filter Mode' is set to 'Allow'. The 'Access Policy' is '(1)'. The 'Remark' field is empty. The 'Start IP' is '192.168.1.100' and the 'End IP' is '192.168.1.120'. The 'Port' is '5555' and the 'Type' is 'TCP'. The 'Time' is set to '0:00 - 0:00'. The 'Date' is set to 'Sunday' and 'Saturday'. The 'Enable' checkbox is checked. There are 'Clear this item' and 'Clear' buttons. 'Save' and 'Cancel' buttons are at the bottom.

• **Example 2:** To allow only the computer at an IP address of 192.168.1.145 to access Internet from 8:00 to 18:00 without restricting other computers in LAN, do as follow

The screenshot shows the 'IP Address Filtering' configuration page. The 'Filter Mode' is set to 'Allow'. The 'Access Policy' is '(1)'. The 'Remark' field is empty. The 'Start IP' is '192.168.1.145' and the 'End IP' is '192.168.1.145'. The 'Port' is '80' and the 'Type' is 'TCP'. The 'Time' is set to '8:00 - 18:00'. The 'Date' is set to 'Monday' and 'Sunday'. The 'Enable' checkbox is checked. There are 'Clear this item' and 'Clear' buttons. 'Save' and 'Cancel' buttons are at the bottom.

## 8.2 MAC Address Filtering

To better manage the computers in LAN, you can use the MAC Address Filter function to control the computer's access to Internet.



The screenshot shows a web-based configuration interface for MAC Address Filtering. At the top, there is a navigation menu with tabs for Network Settings, Wireless Settings, DHCP, Virtual Server, Security Settings, Routing Settings, and Maintenance. Below this, a sub-menu contains IP Address Filtering, MAC Address Filtering (which is highlighted), URL Filtering, and Remote Management. The main configuration area has a red background and contains the following fields:

- Filter Mode:** A dropdown menu set to "Allow".
- Access Policy:** A dropdown menu set to "(1)".
- Remark:** A text input field.
- MAC address:** Six individual input boxes for entering the MAC address.
- Time:** Two sets of dropdown menus for selecting hours and minutes, with a hyphen between them.
- Date:** Two dropdown menus for selecting the start and end days of the week (e.g., Sunday to Saturday).
- Enable:** A checked checkbox, a "Clear this item" link, and a "Clear" button.
- At the bottom, there are "Save" and "Cancel" buttons.

- **Filter Mode:** Select Forbid only or Permit only according to your own needs.
- **Access Policy:** Select a number (indicating a filter rule) from the drop-down menu.
- **Remark:** Enter a meaningful name to you for a new filter rule.  
MAC address: Enter the computer's MAC address that you want to filter out in the MAC address field.
- **Time:** Select a time range for the new MAC address filter rule to take effect.
- **Day:** Select a day or several days for the new MAC address filter rule to take effect.
- **Enable:** Check to enable or uncheck to disable a corresponding filter rule (allow/disallow matched packets to pass through router).

**Example1:** To prevent a PC at the MAC address of 00:1E:A6:44:35:69 from accessing Internet within the time range of 8:00-18:00 from Monday to Friday, do as follows:

The screenshot shows the 'MAC Address Filtering' configuration page. The 'Filter Mode' dropdown is set to 'Deny'. The 'Access Policy' is '(1)'. The 'Remark' field is empty. The 'MAC address' field is filled with 00, 1E, A6, 44, 35, 69. The 'Time' field is set to 8:00 - 18:00. The 'Date' field is set to Monday - Friday. The 'Enable' checkbox is checked. There are 'Save' and 'Cancel' buttons at the bottom.

**Example2:** To allow only the PC at a MAC address of 00:1E:A6:44:35:69 to access Internet from Monday to Friday, do as follows:

The screenshot shows the 'MAC Address Filtering' configuration page. The 'Filter Mode' dropdown is set to 'Allow'. The 'Access Policy' is '(1)'. The 'Remark' field is empty. The 'MAC address' field is filled with 00, 1E, A6, 44, 35, 69. The 'Time' field is set to 0:00 - 0:00. The 'Date' field is set to Monday - Friday. The 'Enable' checkbox is checked. There are 'Save' and 'Cancel' buttons at the bottom.

### 8.3 URL Filtering

To better control the LAN computers' access to websites, you can use URL filtering to allow or disallow their access to certain websites within a specified time range.

The screenshot shows the 'URL Filtering' configuration page. The 'Filter Mode' is set to 'Deny'. The 'Access Policy' is set to '1'. The 'Remark' field is empty. The 'Start IP' and 'End IP' are both set to '192.168.1'. The 'URL character string' field is empty. The 'Time' is set to '0:00-0:00'. The 'Date' is set to 'Sunday - Saturday'. The 'Enable' checkbox is checked. There are 'Clear this item' and 'Clear' buttons next to the 'Enable' checkbox. At the bottom of the form are 'Save' and 'Cancel' buttons.

- **Filter Mode:** Select Disable or Forbid only according to your own needs.
- **Access Policy:** Select a number (indicating a filter rule) from the drop-down menu.
- **Remark:** Enter a meaningful name to you for a new filter rule.
- **Start/End IP Address:** Enter the starting/ending IP address.
- **URL character string:** Enter domain names or a part of a domain name that needs to be filtered.
- **Time:** Select a time range for the new URL filter rule to take effect.
- **Day:** Select a day or several days for the new MAC address filter rule to take effect.
- **Enable:** Check to enable or uncheck to disable a corresponding filter rule (allow/disallow matched packets to pass through router).

#### For example:

If you want to disallow all computers on your LAN to access "yahoo.com" at the time range of 8:00-18:00 from Monday to Friday, then do as follow.

**⚠ Note: Each URL character string entry can corresponded to only a domain name. So you need to set multiple rules if you want to filter out multiple domain names.**

### 8.4 Remote Management

The Remote Web-based Management feature allows users to configure your router from Internet via a web browser.

- **Enable:** Check or uncheck to enable or disable the remote web-based management feature.
- **Port:** Enter a port number for remote web-based management.
- **IP Address:** Enter the IP address of a PC on Internet authorized to access and manage your router's web-based utility remotely.

**⚠ Note:** If you enter 0.0.0.0 in the IP address box, then all PCs on Internet can access your router's Web-based utility to view or change your settings remotely once you enable the remote Web-based management feature.

**For example:** If you want to allow only a PC at the IP address of 218.88.93.33 to access your router's web-based utility from Internet via port: 8080, you need to configure same settings shown in the diagram above on your router. And what this IP user needs to do is to simply launch a browser and enter `http://220.135.211.56:8080` (provided that your router's WAN IP address is 220.135.211.56).

The screenshot shows a router's configuration interface. At the top, there is a navigation bar with tabs: Network Settings, Wireless Settings, DHCP, Virtual Server, Security Settings, Routing Settings, and Maintenance. Below this, there is a sub-menu with options: IP Address Filtering, MAC Address Filtering, URL Filtering, and Remote Management (which is highlighted in yellow). The main content area is a configuration form for Remote Management. It features a red header bar with the text "Enable" and a checked checkbox. Below this, there is a "Port" field with the value "8080" and an "IP Address" field with the value "220.135.211.56". At the bottom of the form, there are "Save" and "Cancel" buttons.

## Chapter 9 Routing Settings

### 9.1 Routing Table

This page displays the router's core routing table which lists destination IP address, subnet mask, gateway, hop count and interface.

Destination IP	Subnet mask	Gateway	Hops	Interface
192.168.1.0	255.255.255.0	192.168.1.0	0	br0

The principal task for a router is to look for an optimal transfer path for each data packet passing through it, and transfer it to the specified destination. So, it's essential for the router to select an optimal path, i.e. routing algorithm. To complete this work, the router stores related data of various transfer paths, i.e. establishing a routing table, for future route selection.

### 9.2 Static Routing

You can use this section to set up router's static routing feature.

Destination network IP address	Subnet mask	Gateway	Operate
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="add"/>

- **Destination Network IP Address:** Enter a destination IP address or subnet.
- **Subnet Mask:** Enter a Subnet Mask that corresponds to destination IP address or subnet you entered.
- **Gateway:** Next-hop IP address.



**Note:**

1. **Gateway IP address must be on the same subnet with the router's LAN/WAN IP address.**
2. **If you want destination network to be a single host, then you must enter an IP address thereof and 255.255.255.255 respectively in Destination Network IP Address and Subnet Mask boxes.**
3. **If you want destination network to be a network, then you must enter an IP address and a corresponding subnet mask value respectively in Destination Network IP Address and Subnet Mask boxes. For example, if you enter 10.0.0.0 in the IP address box, then corresponding subnet mask should be 255.0.0.0.**



## Chapter 10 Maintenance

### 10.1 Time Settings

This section assists you in setting the device's system time; you can either select to set the time and date manually or automatically obtain the GMT time from Internet.

Network Settings Wireless Settings DHCP Virtual Server Security Settings Routing Settings Maintenance

Time Settings DDNS Backup/Restore Factory Defaults Firmware Upgrade Restart Password Syslog

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

(Note : GMT time can only be got after accessing to the Internet.)

Customized time:

2013 Year 4 Month 13 Date 9 Hour 30 Minute Second

Save Cancel

**Note:** The configured time settings lose once the router is powered off. But it obtains the GMT time automatically when you connect it to the Internet. Features/functions based on time (e.g. security settings) take effect only after time settings are configured manually or updated automatically from Internet.

### 10.2 DDNS

Dynamic DNS or DDNS is a term used for the updating in real time of Internet Domain Name System (DNS) name servers. We use a numeric IP address allocated by Internet Service Provider (ISP) to connect to Internet; the address may either be stable ("static"), or may change from one session on the Internet to the next ("dynamic"). However, a numeric address is inconvenient to remember; an address which changes unpredictably makes connection impossible. The DDNS provider allocates a static hostname to the user; whenever the user is allocated a new IP address this is communicated to the DDNS provider by software running on a computer or network device at that address; the provider distributes the association between the hostname and the address to the Internet's DNS servers so that they may resolve DNS queries. Thus, uninterrupted access to devices and services whose numeric IP address may change is maintained.

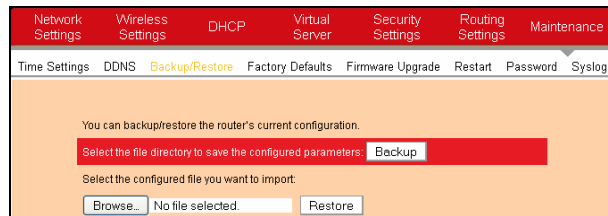
- **DDNS Service:** Click Enable or Disable radio button to enable/disable the DDNS feature.
- **Service Provider:** Select your DDNS service provider from the drop-down menu (DynDNS or no-ip).
- **Username:** Enter the DDNS username provided by your DDNS service provider.
- **Password:** Enter the DDNS password provided by your DDNS service provider.
- **Domain Name:** Enter the DDNS domain name distributed by your DDNS service provider.

Username	Admin
Password	12345678
Domain Name	domain.no-ip.com

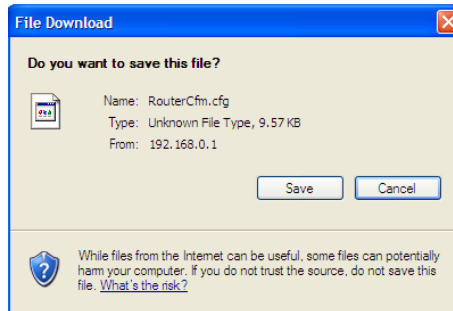
**For example:** If you have registered a DDNS service in no-ip.com and are allocated with domain, 12345678, domain.no-ip.com respectively as username, password and domain name for a web server on your PC at 192.168.1.10, then configure port settings on port range forwarding interface under virtual server menu and enter this information on the above DDNS interface. Others can access your web server by simply entering `http://domain.no-ip.com` in their browser address bar.

### 10.3 Backup/Restore

This section allows you to backup current settings or to restore the previous settings configured on the device.

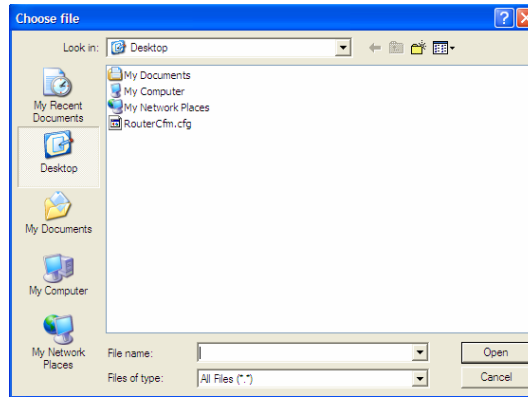


- **Backup** : Once you have configured the device the way you want it, you can save these settings to a configuration file on your local hard drive that can later be imported to your device in case that the device is restored to factory default settings. To do this, click the “Backup” button next to where it says “Select the file directory to save the configured parameters” on the screen above.

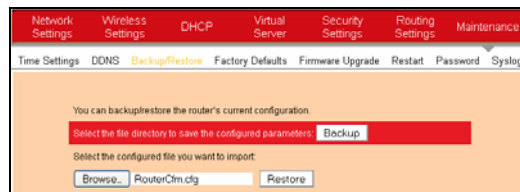


And then, click the “Save” button on the appearing screen above to store it under the selected path.

- **Restore** : Click the "Browse" button to locate and select a configuration file that is saved previously to your local hard drive.

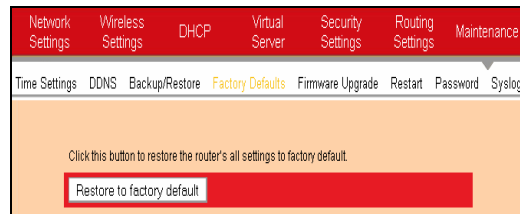



And then click the "Restore" button to reset your device to previous settings.



#### 10.4 Factory Default

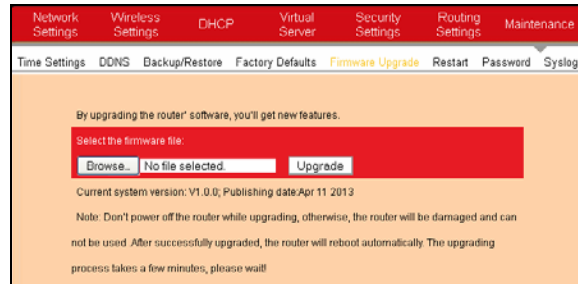
To restore all settings to the device's factory default values, click the "Restore to Factory Default" button on the interface below:



 **Note:** To activate your settings, reboot the device after you reset it.

## 10.5 Firmware Upgrade

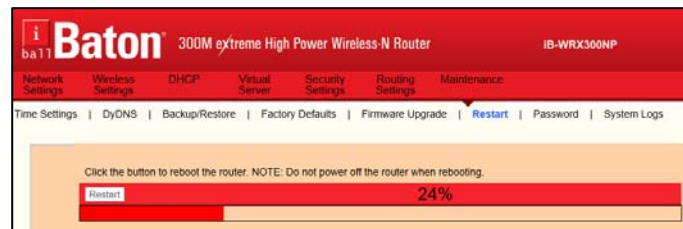
Firmware upgrade is released periodically to improve the functionality of your device and also to add new features. If you run into a problem with a specific feature of the device, log on to our website ([www.iballbaton.com](http://www.iballbaton.com)) to download the latest firmware to update your device.



- **Browse:** Click this button to select an upgrade file.
- **Upgrade:** Click this button to start an upgrading process. After the upgrade is completed, the Router will reboot automatically.

## 10.6 Restart

By Rebooting the device, new settings can be brought into effect. And WAN connection will be cut automatically during this process.




## 10.7 Password

This section allows you to change login password for accessing

device's Web-based interface.

The screenshot shows the 'Password' page in the device's web interface. The navigation menu at the top includes Network Settings, Wireless Settings, DHCP, Virtual Server, Security Settings, Routing Settings, and Maintenance. Below this, a secondary menu contains Time Settings, DDNS, Backup/Restore, Factory Defaults, Firmware Upgrade, Restart, Password (highlighted), and Syslog. The main content area has an orange background and contains the following text: 'On this page, you can change the administrator's password.' and 'Note: Password can only consist of letters and numbers.' There are three input fields: 'Old password', 'New password', and 'Confirm new password'. At the bottom, there are 'Save' and 'Cancel' buttons.

- **Old Password:** Enter the old password.
- **New Password:** Enter a new password.
- **Confirm new Password:** Re-enter the new password for confirmation.
- **OK:** Click it to save your new password.

 **Note:** For the sake of security, it is highly recommended that you change default login password.

### 10.8 System Logs

The Syslog option allows you to view all events that occur upon system startup and check whether there is attack present in your network.

The screenshot shows the 'Syslog' page in the device's web interface. The navigation menu at the top is the same as in the previous screenshot. The secondary menu includes Time Settings, DDNS, Backup/Restore, Factory Defaults, Firmware Upgrade, Restart, Password, and Syslog (highlighted). The main content area has an orange background and contains the following text: 'The 1 page log contents'. Below this, there is a table with one row of log data: '1 | 2011-04-01 00:00:00 | main | System start'. At the bottom, there are 'Refresh' and 'Clear' buttons.

- **Refresh:** Click this button to update the log.

- **Clear:** Click this button to clear the log record.

### Appendix A: Product Specification

<b>General</b>	
Standards	IEEE 802.3, 802.3u, 802.11b, 802.11g & 802.11n
Protocols	TCP/IP, PPPoE, DHCP, ICMP, NAT, SMTP
Ports	One 10/100M Auto-Negotiation WAN RJ45 port, Four 10/100M Auto-Negotiation LAN RJ45 ports supporting Auto MDI/MDIX
Cabling Type	10BASE-T: UTP category 3, 4, 5 cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m)
	100BASE-TX: UTP category 5, 5e cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m)
LEDs	Power, SYS, WLAN, WAN, LAN (1-4), WPS
Safety & Emissions	FCC, CE
<b>Wireless</b>	
Frequency Band	2.412~2.462GHz
Radio Data Rate	11n: up to 150Mbps (Automatic) 11g: 54/48/36/24/18/12/9/6M (Automatic) 11b: 11/5.5/2/1M (Automatic)
Channels	11
Frequency Expansion	DSSS(Direct Sequence Spread Spectrum)

Modulation	DBPSK, DQPSK, CCK, OFDM, 16-QAM, 64-QAM
Security	WEP/WPA/WPA2/WPA2-PSK/WPA-PSK
Sensitivity @PER	130M: -68dBm@10% PER 108M: -68dBm@10% PER; 54M: -68dBm@10% PER 11M: -85dBm@8% PER; 6M: -88dBm@10% PER 1M: -90dBm@8% PER
RF Power	20dBm(max)
Antenna Gain	2dBi Omni Directional
Power adapter	12V DC, 0.5A
<b>Environmental and Physical</b>	
Temperature.	Operating : 0°C~40°C (32°F~104°F)
	Storage: -40°C~70°C(-40°F~158°F)
Humidity	Operating: 10% - 90% RH, Non-condensing
	Storage: 5% - 90% RH, Non-condensing



## **Appendix B: Glossary**

### **Channel**

A communication channel, also known as channel, refers either to a physical transmission medium such as a wire or to a logical connection over a multiplexed medium such as a radio channel. It is used to transfer an information signal, such as a digital bit stream, from one or more transmitters to one or more receivers.

If there are several APs coexisting in the same area, it is recommended that you configure a different channel for each AP to minimize the interference between neighboring APs. For example, if 3 American-standard APs (i.e. adopts 11 channels) coexist in one area, you can setup their channels respectively to 1, 6 and 11 to avoid mutual interference.

### **SSID**

Service set identifier (SSID) is used to identify a particular 802.11 wireless LAN. It is the name of a specific wireless network. To let your wireless network adapter roam among different APs, you must set all Aps' SSID to the same name.

### **WPA/WPA2**

The WPA protocol implements the majority of the IEEE 802.11i standard. It enhances data encryption through the Temporal Key Integrity Protocol (TKIP) which is a 128-bit per-packet key, meaning that it dynamically generates a new key for each packet. WPA also includes a message integrity check feature to prevent data packets from being hampered with. Only authorized network users can access the wireless network.

The later WPA2 protocol features compliance with the full IEEE 802.11i standard and uses Advanced Encryption Standard (AES) in addition to TKIP encryption protocol to guarantee better security than that provided by WEP or WPA.

## **Appendix C:**

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