WAP-5940
Wireless Video Bridge
User Manual

261097-022

Version A1.1, November 1, 2016

Preface

This manual provides information related to the installation and operation of this device. The individual reading this manual is presumed to have a basic understanding of telecommunications terminology and concepts.

If you find the product to be inoperable or malfunctioning, please contact technical support for immediate service by email at INT-support@comtrend.com

For product update, new product release, manual revision, or software upgrades, please visit our website at http://www.comtrend.com

Important Safety Instructions

With reference to unpacking, installation, use, and maintenance of your electronic device, the following basic guidelines are recommended:

- Do not use or install this product near water, to avoid fire or shock hazard. For example, near a bathtub, kitchen sink or laundry tub, or near a swimming pool. Also, do not expose the equipment to rain or damp areas (e.g. a wet basement).
- Do not connect the power supply cord on elevated surfaces. Allow it to lie freely. There should be no obstructions in its path and no heavy items should be placed on the cord. In addition, do not walk on, step on, or mistreat the cord.
- Use only the power cord and adapter that are shipped with this device.
- To safeguard the equipment against overheating, make sure that all openings in the unit that offer exposure to air are not blocked.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightening. Also, do not use the telephone to report a gas leak in the vicinity of the leak.
- Never install telephone wiring during stormy weather conditions.

CAUTION:

- To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.
- Always disconnect all telephone lines from the wall outlet before servicing or disassembling this equipment.

WARNING

- Disconnect the power line from the device before servicing.
- Power supply specifications are clearly stated in Appendix A - Specifications.

Copyright

NOTE: This document is subject to change without notice.

Protect Our Environment

This symbol indicates that when the equipment has reached the end of its useful life, it must be taken to a recycling centre and processed separate from domestic waste.

The cardboard box, the plastic contained in the packaging, and the parts that make up this router can be recycled in accordance with regionally established regulations. Never dispose of this electronic equipment along with your household waste; you may be subject to penalties or sanctions under the law. Instead, please be responsible and ask for disposal instructions from your local government.

Table of Contents

Chapter 1 Introduction

The WAP-5940 is an 802.11ac 4T4R wireless video bridge, with two Giga Ethernet ports. WAP-5940 performs AP to transmission package TCP/UDP to client, also supporting station mode, receiving packets and forwarding to the Ethernet port.

WAP-5940 has a high power wireless design which supports 802.11ac 5Ghz band 4T4R and is backward compatible 802.11n, 802.11a.

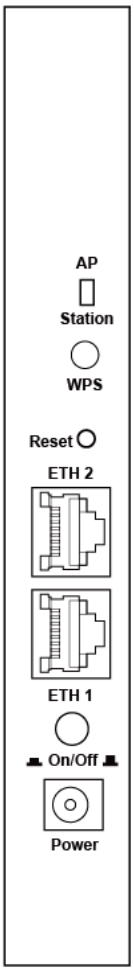
Chapter 2 Installation

2.1 Hardware Setup

Follow the instructions below to complete the hardware setup.

BACK PANEL

The figure below shows the back panel of the device.



Power ON
Press the power button to the OFF position (OUT). Connect the power adapter to the power port. Attach the power adapter to a wall outlet or other AC source. Press the power button to the ON position (IN). If the Power LED displays as expected then the device is ready for setup (see section 2.2 LED Indicators).

Caution 1:	If the device fails to power up, or it malfunctions, first verify that the power cords are connected securely and then power it on again. If the problem persists, contact technical support.
Caution 2:	Before servicing or disassembling this equipment, disconnect all power cords and telephone lines from their outlets.

Ethernet (LAN) Ports
Use 1000-BASE-T RJ-45 cables to connect two network devices to a Gigabit LAN, or 10/100BASE-T RJ-45 cables for standard network usage. These ports are auto-sensing MDI/X; so either straight-through or crossover cable can be used.

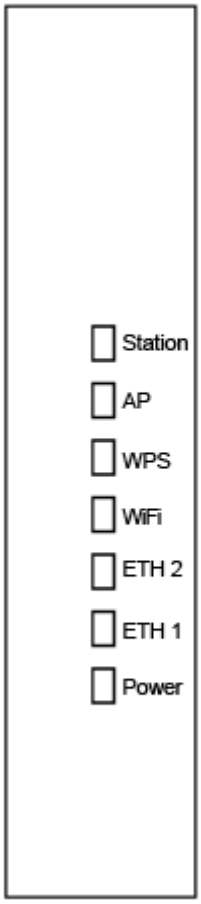
Reset Button
To reboot the device press the Reset button for 1-5 seconds. Restore the default parameters of the device by pressing the Reset button for more than 5 seconds. After the device has rebooted successfully, the front panel should display as expected (see section 2.2 LED Indicators for details).

WPS Button
Press and release the WPS button to start the WPS connection process with the other device. The connection duration is 2 minutes during which the WPS LED will blink. If there is no client connection the WPS led will turn off. If connection is successful the WPS LED will stay on.

AP/Station Switch
Select the desired option.

2.2 LED Indicators

The front panel LED indicators are shown below and explained in the following table. This information can be used to check the status of the device and its connections.



LED	Color	Mode	Description
POWER	GREEN	On	Power on
		Off	Power off
ETH1	GREEN	On	Ethernet connected
		Off	Ethernet not connected
		Blink	Ethernet is transmitting/receiving
ETH2	GREEN	On	Ethernet connected
		Off	Ethernet not connected
		Blink	Ethernet is transmitting/receiving
WiFi	GREEN	On	Wi-Fi enabled
		Off	Wi-Fi disabled
		Blink	[AP] When no client connected [Station] When not connected to the AP

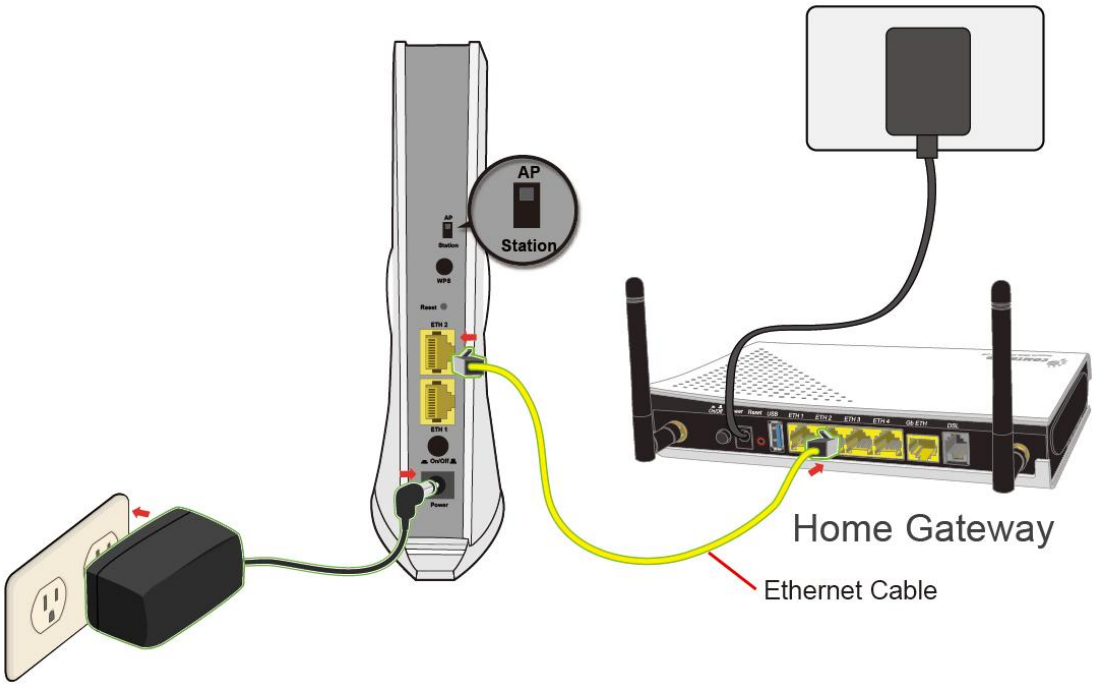
WPS	GREEN	On	WPS connection successful
		Off	No WPS (5G) association process ongoing
		Blink	WPS (5G) connection in progress
AP	GREEN	On	WAP-5940 working in AP mode
		Off	WAP-5940 working in Station mode
Station	GREEN	On	WAP-5940 working in Station mode
		Off	WAP-5940 working in AP mode

2.3 Initial Device Setup

AP Device Setup

1. Setup the first Wireless Video Bridge by plugging in the power adapter and press the **Power Button** to the ON position (IN). Set the Wireless Video Bridge to AP Mode by sliding the **AP/Station Switch** to the up position.

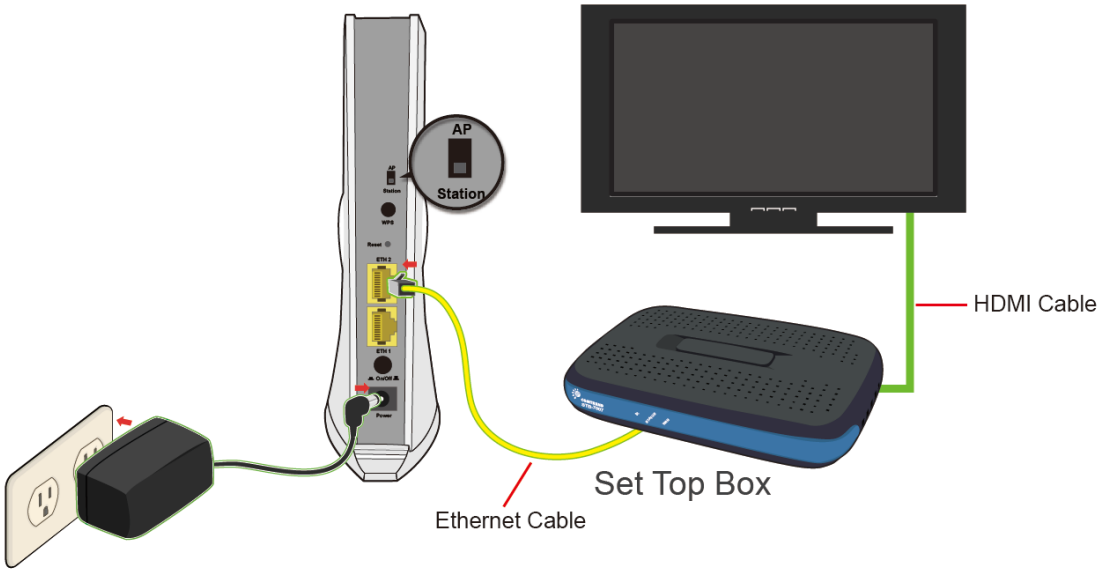
2. Connect the Wireless Video Bridge to a Network Device (Gateway, Router, etc.) with an Ethernet (RJ-45) cable. You can use either Ethernet ports of the Wireless Video Bridge to make this connection.



Station Device Setup

3. Setup the additional Wireless Video Bridge closest to the location you want to directly connect the Internet Enabled Device (STB, DVR, etc.). Plug in the power adapter and press the **Power Button** to the ON position (IN). Set the Wireless Video Bridge to Station Mode by sliding the **AP/Station Switch** to the down position.

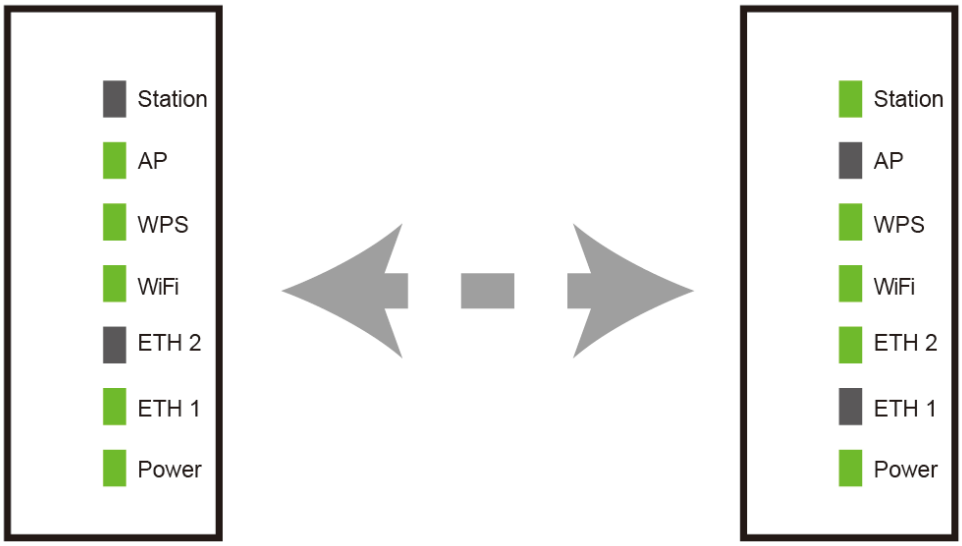
4. Connect the Wireless Video Bridge to an Internet Enabled Device (STB, DVR, etc.) with an Ethernet (RJ-45) cable. You can use either Ethernet ports of the Wireless Video Bridge to make this connection.



2.3.1 Setup of Wireless Devices via WiFi Protected Setup

5. Press and release the WPS button on the device setup in AP Mode and the **WPS LED** will start to blink **GREEN**.

6. Within two minutes press and release the WPS button on the device setup in Station Mode the **WPS LED** will start to blink **GREEN**.



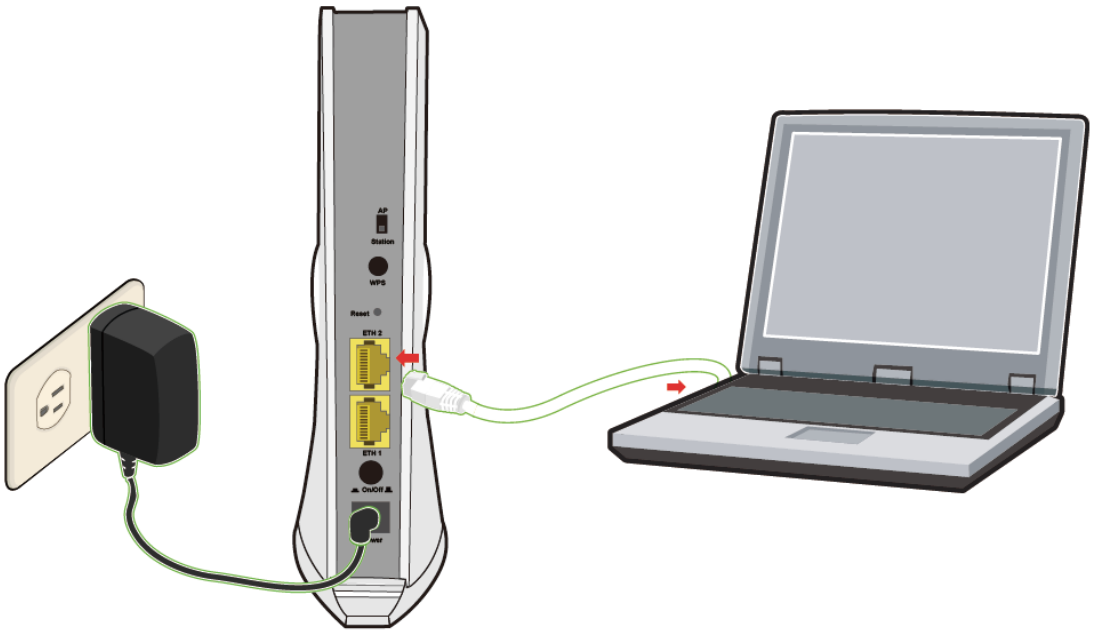
7. Upon successful connection, the **WPS LED** and **WiFi LED** will light up solid **GREEN** on both of the Wireless Video Bridges.

8. Repeat steps 3-7 to add additional station devices.

2.3.2 Setup of Wireless Devices via Manual Connection

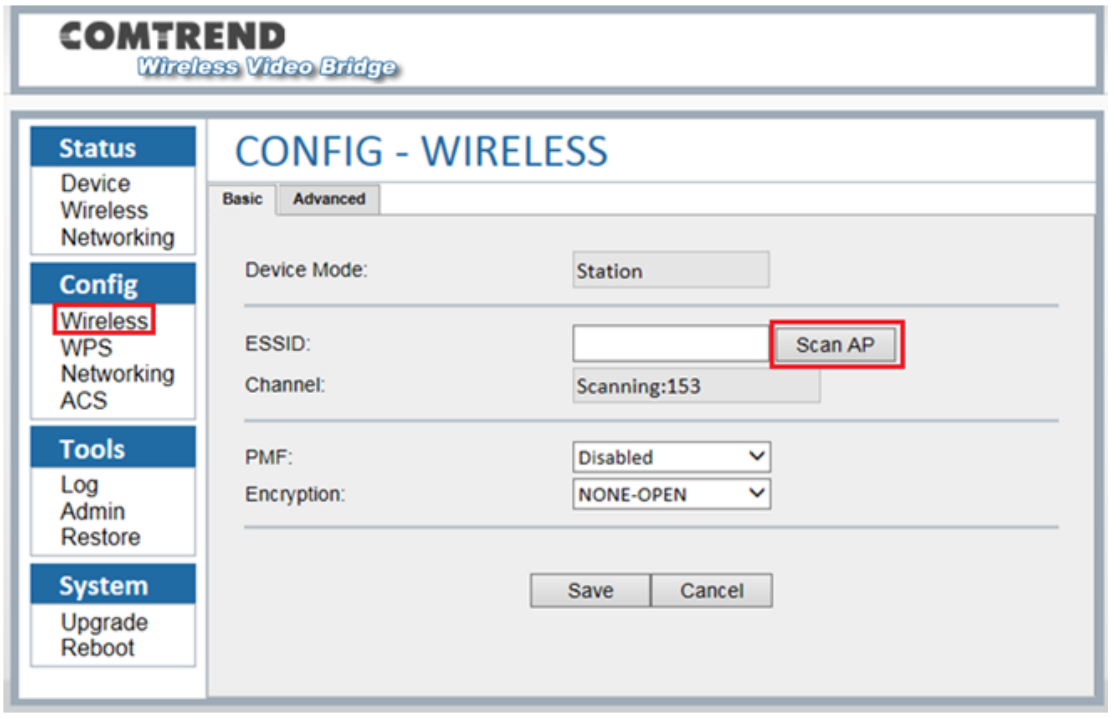
NOTE: If you do not wish to setup your Wireless Video Bridges via WPS you can set it up manually.

1. Plug one end of the Ethernet cable into the LAN port of a Notebook/PC (setup with a fixed IP 10.0.0.11 and subnet mask 255.255.255.0) and the other end into the Ethernet port of the Wireless Video Bridge that is in Station Mode.

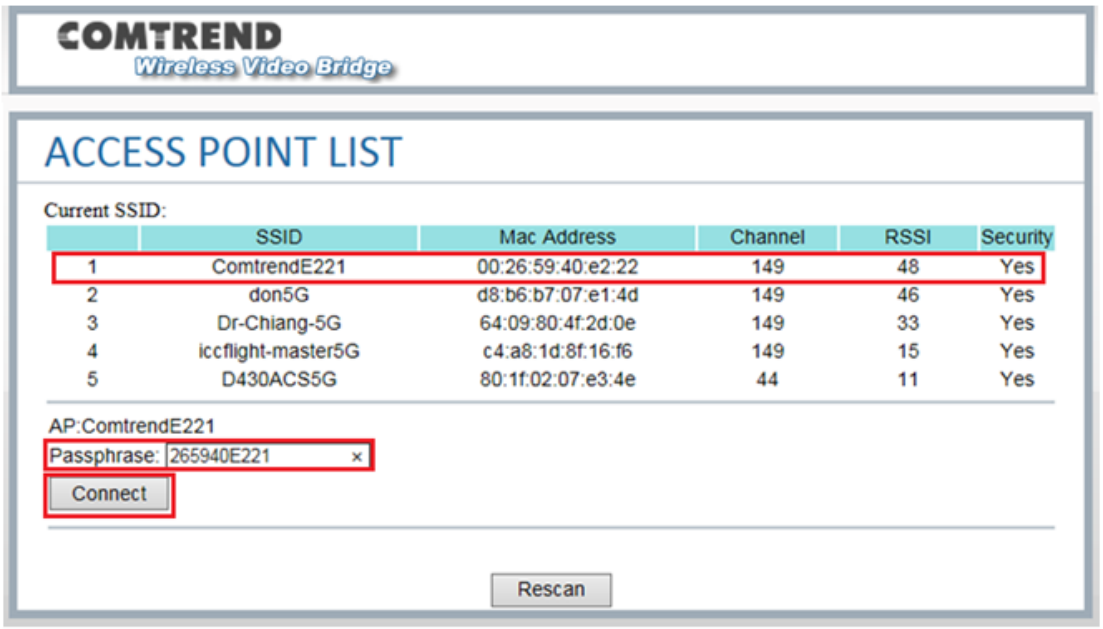


2. Open your Internet browser to access 10.0.0.10 and input the Username: root and Password: 12345

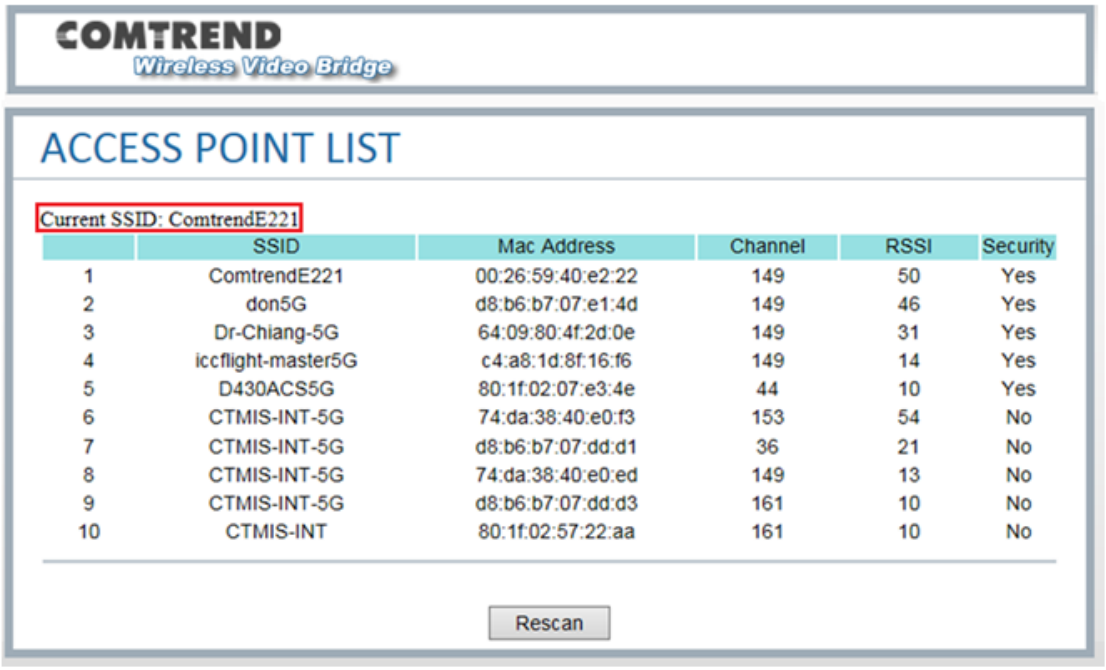
3. Once you have accessed the Web UI, click Config> Wireless (as shown below). Next, click "Scan AP."



4. Select an SSID (AP unit) and input the passphrase. The SSID and passphrase **(WiFi Key)** can be found a label on the bottom on the Wireless Video Bridge. Next, click "connect."

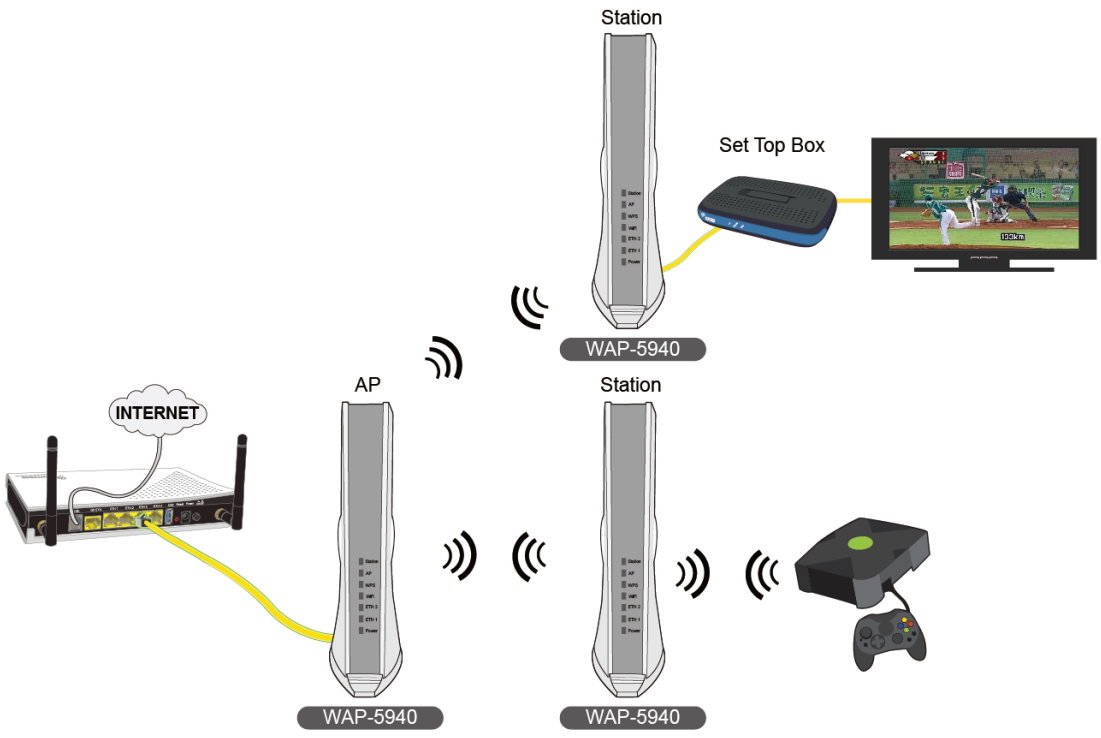


5. To confirm that the connection is sucessful, check that the current SSID is the same as the one that you tried to connect to in the previous step.



2.3.3 Setup Complete

Your Wireless Video Bridges are now setup! Enjoy your video streaming!



Chapter 3 Web User Interface

This section describes how to access the device via the web user interface (WUI) using an Internet browser such as Internet Explorer (version 6.0 and later).

3.1 Default Settings

The factory default settings of this device are summarized below.

- LAN IP address AP: 10.0.0.2
- LAN IP address STA: 10.0.0.10
- LAN subnet mask: 255.255.255.0
- Administrative access (username: **root**, password: **12345**)

Caution: The LAN setting default is DHCP mode, if a device connects to the DHCP network, the LAN IP will be changed by the DHCP server assigned.

Technical Note

During power on, the device initializes all settings to default values. It will then read the configuration profile from the permanent storage section of flash memory. The default attributes are overwritten when identical attributes with different values are configured. The configuration profile in permanent storage can be created via the web user interface or telnet user interface, or other management protocols. The factory default configuration can be restored either by pushing the reset button for more than ten seconds until the power indicates LED blinking or by clicking the Restore Default Configuration option in the Restore Settings screen.

3.2 IP Configuration

STATIC IP MODE

In static IP mode, you assign IP settings to your PC manually.

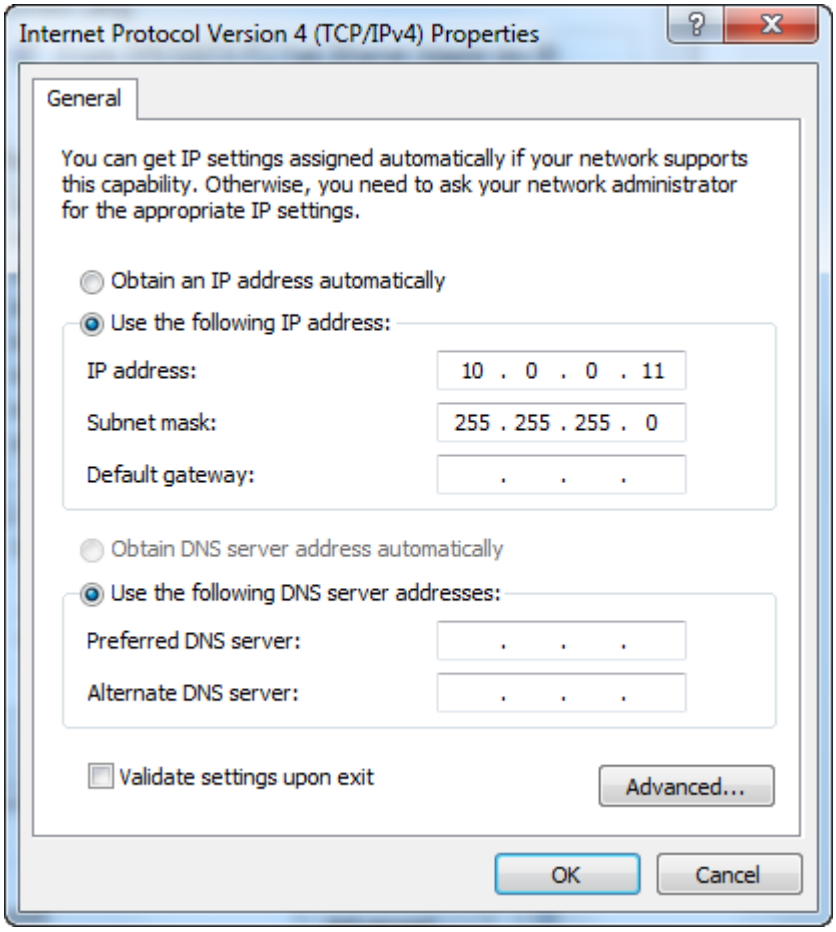
Follow these steps to configure your PC IP address to use subnet 10.0.0.x.

NOTE:	The following procedure assumes you are running Windows. However, the general steps involved are similar for most operating systems (OS). Check your OS support documentation for further details.

STEP 1: From the Network Connections window, open Local Area Connection (*You may also access this screen by double-clicking the Local Area Connection icon on your taskbar*). Click the **Properties** button.

STEP 2: Select Internet Protocol (TCP/IP) **and click the** Properties button.

STEP 3: Change the IP address to the 10.0.0.x (10<x<254) subnet with subnet mask of 255.255.255.0. The screen should now display as shown below.



STEP 4: Click **OK** to submit these settings.

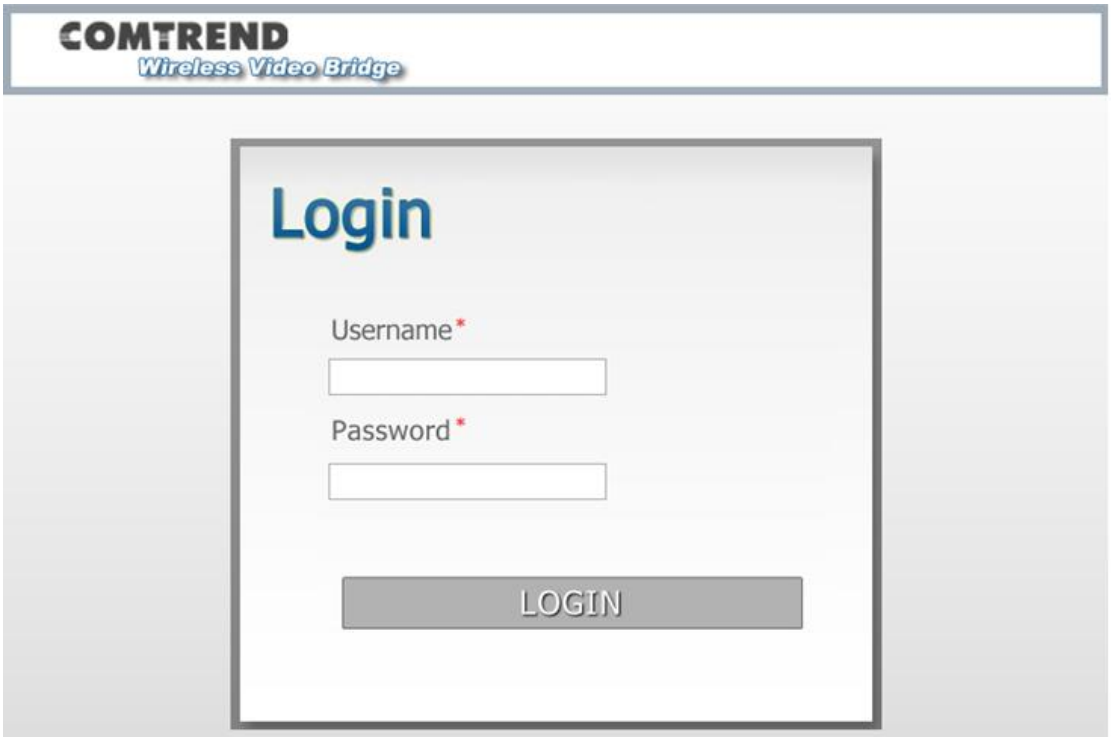
3.3 Login Procedure

Perform the following steps to login to the web user interface.

NOTE:	The default settings can be found in section 3.1 Default Settings.

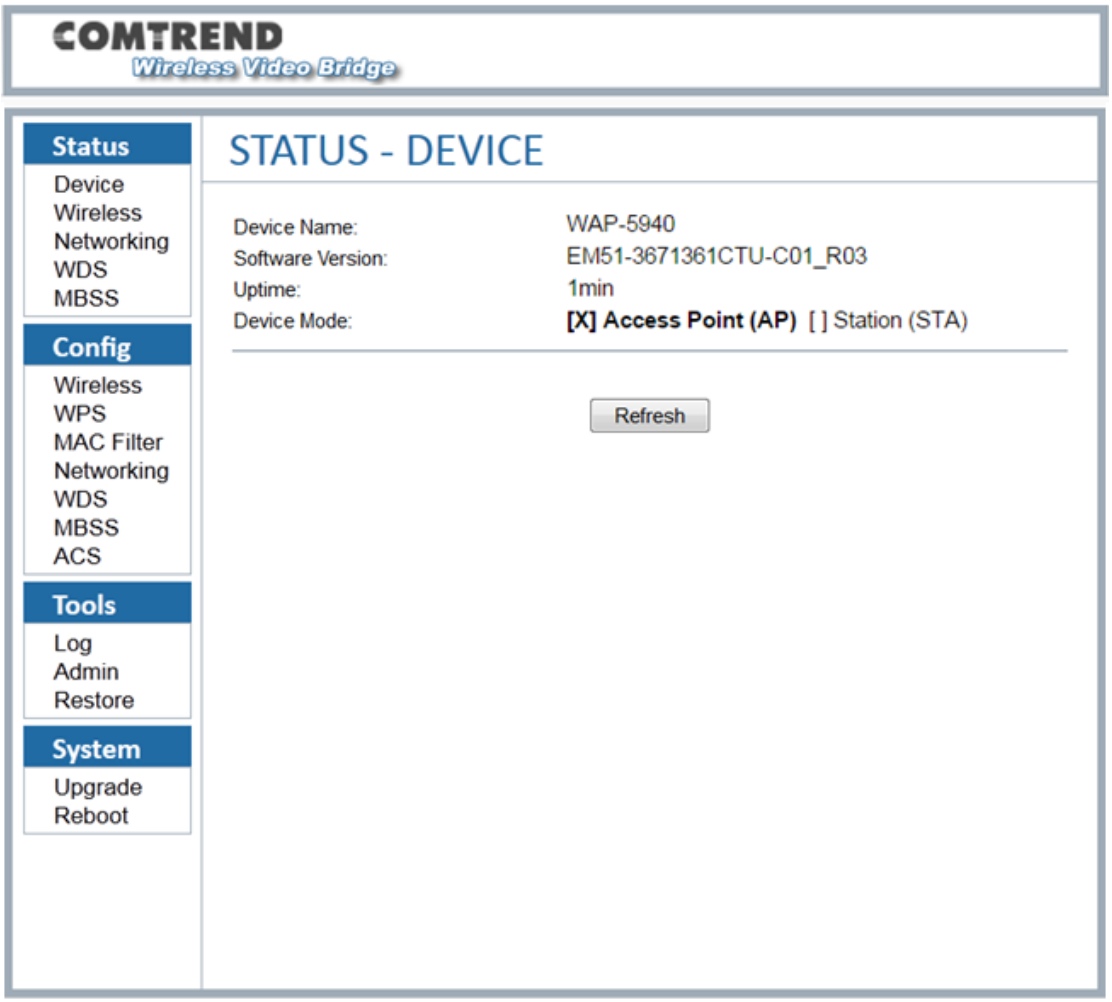
STEP 1: Start the Internet browser and enter the default IP address for the device in the Web address field. For example, if it is the AP device default IP is 10.0.0.2, type http://10.0.0.2

STEP 2: A dialog box will appear, such as the one below. Enter the default username and password, as defined in section 3.1 Default Settings.



Click **LOGIN** to continue.

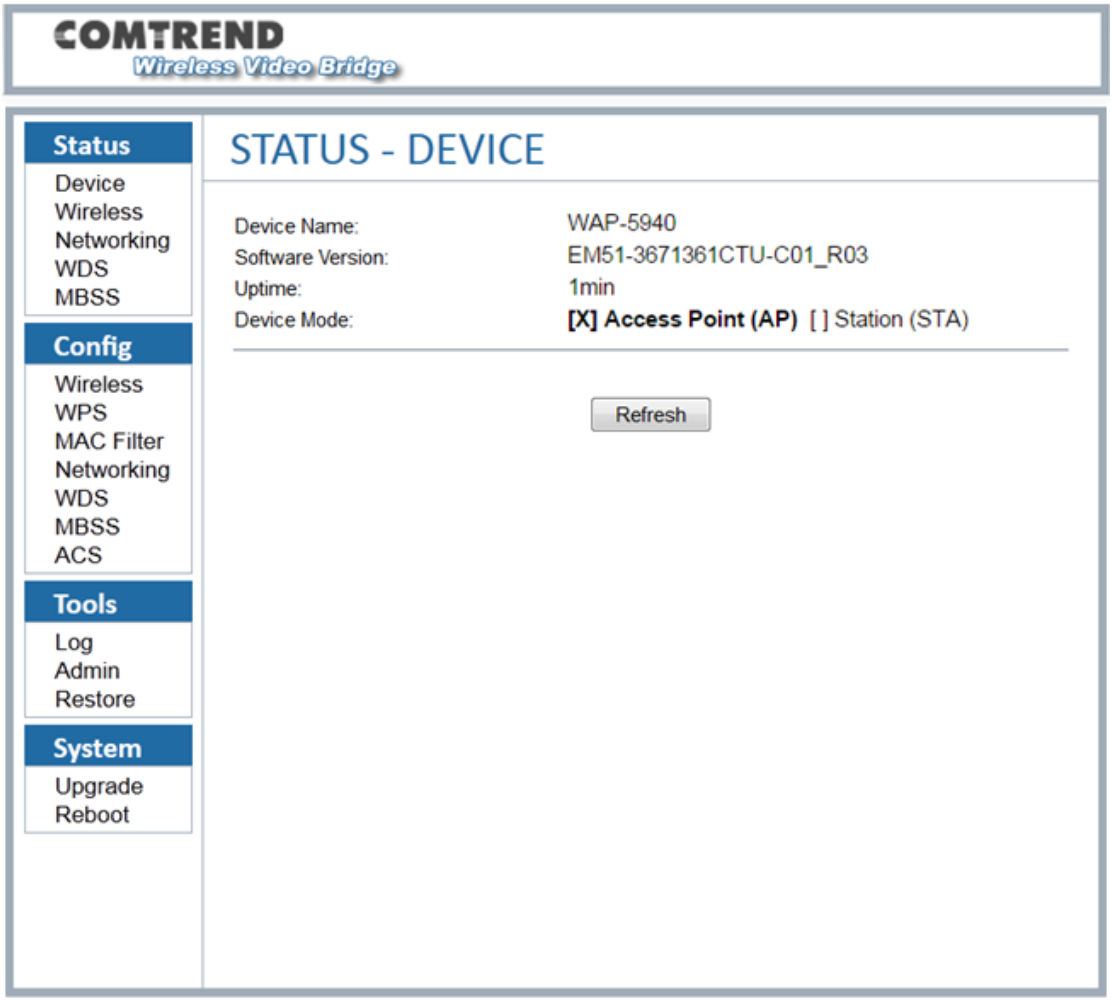
STEP 3: After successfully logging in for the first time (AP device in this example), you will reach the Status - Device screen **AP** (Access Point) shown here.



Chapter 4 Status

4.1 Status - Device

This screen shows the status of the device.



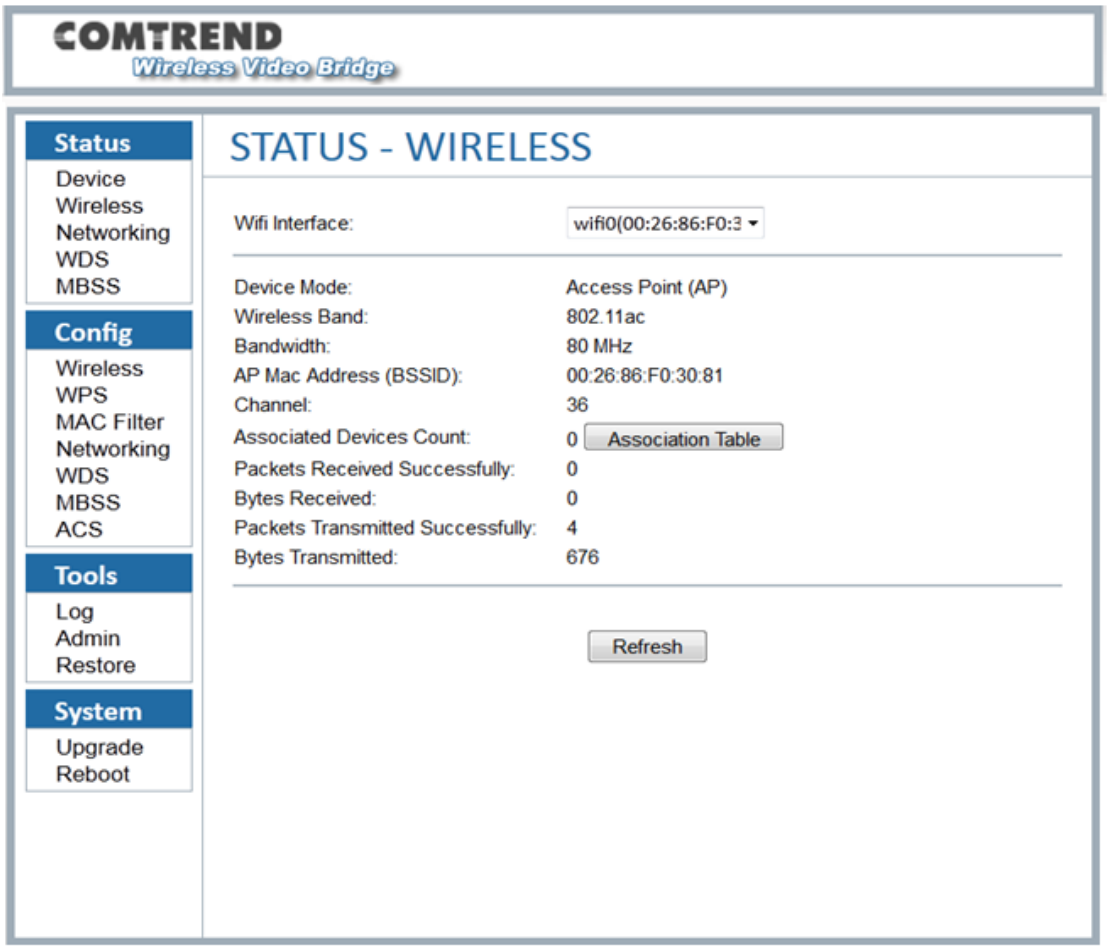
Menu Item	Description	Options	Detail
Device Name	Name of the Comtrend device		
Software Version	Gets the software version of the current system		The version number of the current firmware

Uptime	Displays the uptime of the device		There are two types of display, one kind is minutes and days, another kind is XX:XX(hours:minutes)
Device Mode	AP or STA mode	Access Point(AP) Station(STA)	Device Acts as Access Point or Station. The [X] indicates the current device mode.

4.2 Status – Wireless

This screen shows the wireless status of the device in AP mode.

4.2.1 AP Mode

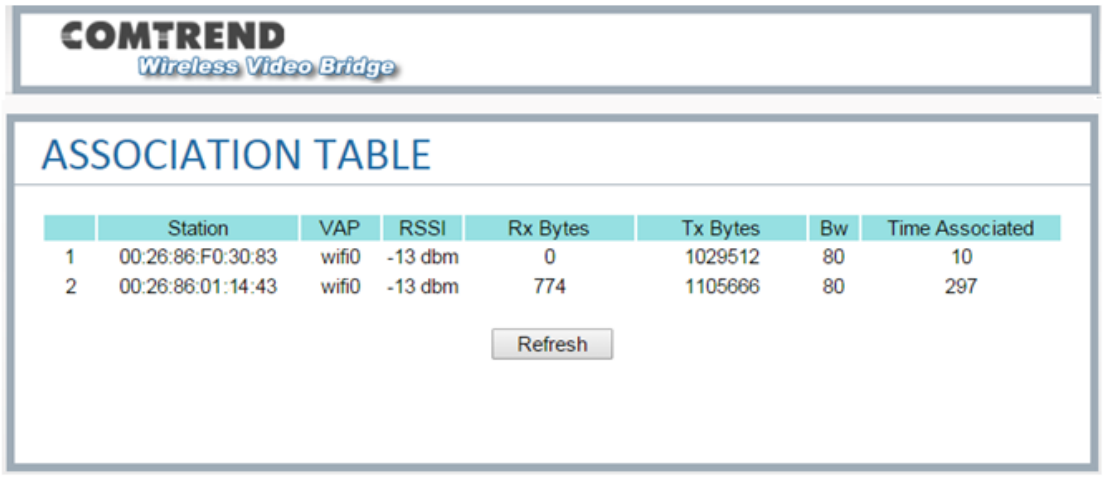


Menu Item	Description	Options	Detail
WiFi Interface	Real wireless device name and MAC Address in CPE		
Device Mode	AP or STA mode	Access Point(AP) Station (STA)	Device Acts as Access Point or Station

Wireless Band	Current system Band	802.11a or 802.11an or 802.11ac	802.11an supports 802.11n and is backward compatible with 802.11a
Bandwidth	Per the 802.11a or 802.11an or 802.11ac standard	20 MHz	20 MHz operation
	Per 802.11an or 802.11ac standard	40 MHz	40 MHz operation
	Per the 802.11ac standard	80MHz	80 MHz operation
AP Mac Address (BSSID)	The current associated BSSID of the Wi-Fi system		In AP mode, it will be the same as the Wireless MAC address
Channel	Available 5Ghz channels based on region setting	36-48, 149-165	5.125-5.825, 4.920-4.980 GHz are the supported frequency ranges
Associated Devices Count	The connected devices number		The number of devices connecting to the AP. Clicking the "Association Table" will link to the Association Table page and display information of all the connected devices.
Packets Received Successfully	Wireless packets which are received successfully		
Bytes Received	The total bytes received successfully		

Packets Transmitted Successfully	Wireless packets transmitted		
Bytes Transmitted	Total bytes transmitted successfully		

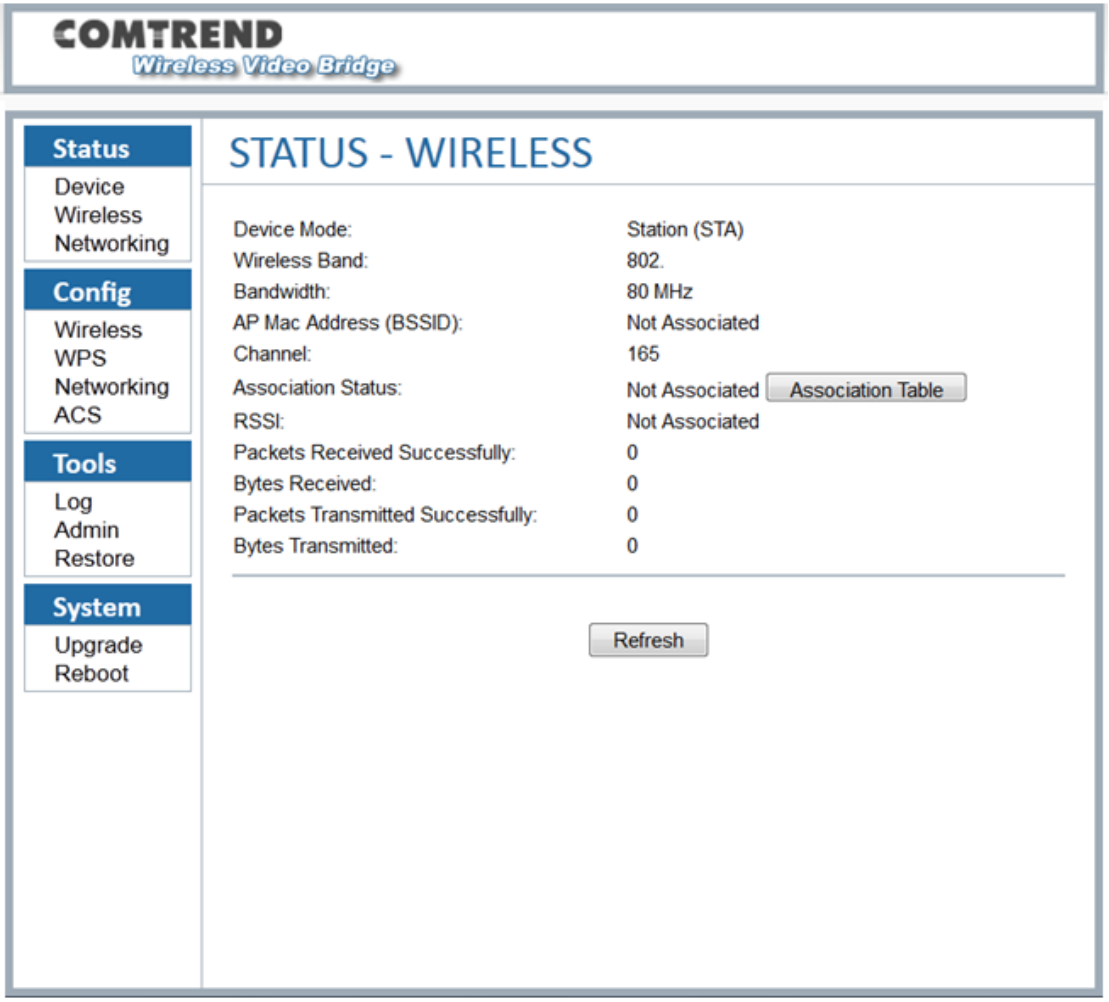
This screen shows the information of all station devices which are connecting with the wifi0 of the AP.



In above example, STA with MAC address 00:26:86:F0:30:83 and 00:26:86:01:14:43 are currently associated to the primary interface (wifi0), If more MACs are listed, more STA are connected with the wifi0.

4.2.2 STA Mode

This screen shows the wireless status of the device that acts as a STA.



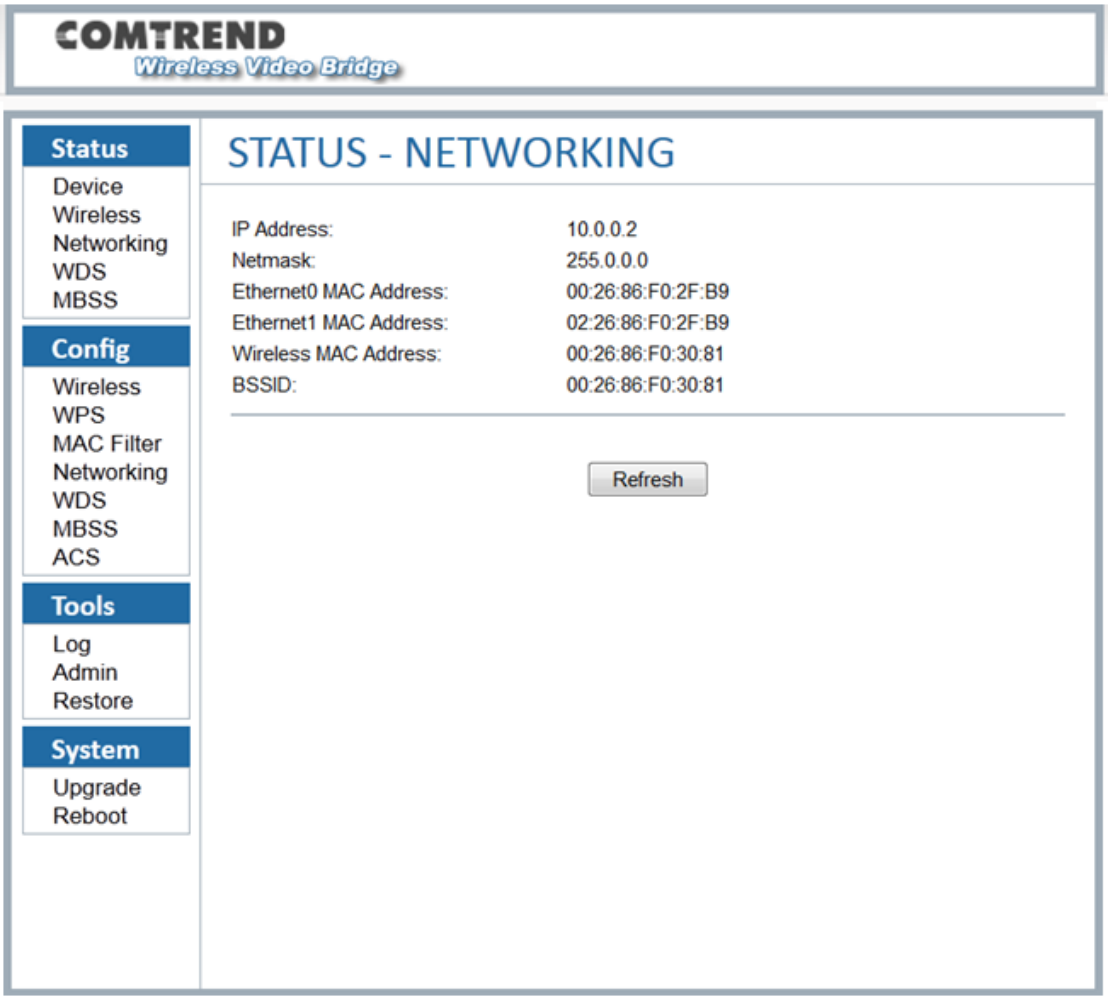
Menu Item	Description	Options	Detail
Device Mode	AP or STA mode	Access Point(AP) Station (STA)	Device Acts as Access Point or Station
Wireless Band	Current system Band	802.11a or 802.11an or 802.11ac	802.11an supports 802.11n and is backward compatible with 802.11a
Bandwidth	Per the 802.11a or 802.11an or 802.11ac standard	20 MHz	20 MHz operation

	Per 802.11an or 802.11ac standard	40 MHz	40 MHz operation
	Per the 802.11ac standard	80MHz	80 MHz operation
AP Mac Address (BSSID)	The current associated BSSID of the Wi-Fi system		In STA mode and associated to an AP: this will be the value of the AP's MAC address. If the STA is not associated, this will state: "Not Associated".
Channel	Available 5Ghz channels based on region setting	36-48, 149-165	5.180-5.240, 5.745-5.825 GHz are the supported frequency ranges
Association Status	The association status of the device		If the STA has connected with an AP, it will display "Associated". If the STA has not connected with an AP, it will display "Not Associated".
RSSI	Received Signal Strength Indication		A measurement of the power present in a received radio signal. The value is the current RSSI in dBm for the association.
Packets Received Successfully	Wireless packets which are received successfully		

Bytes Received	The total bytes received successfully		
Packets Transmitted Successfully	Wireless packets transmitted		
Bytes Transmitted	Total bytes transmitted successfully		

4.3 Status – Networking

This screen shows the status of the networking.

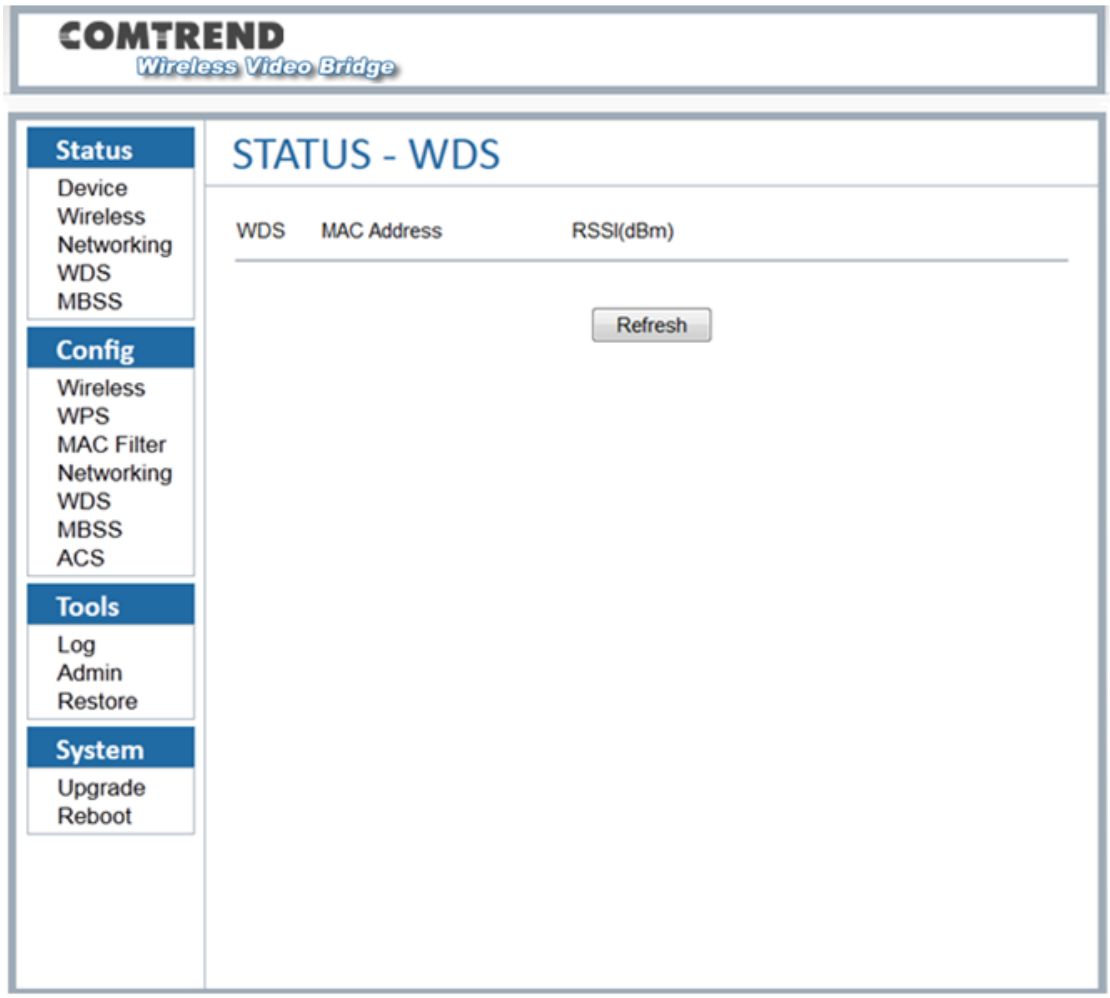


Menu Item	Description	Options	Detail
IP Address	The IP Address of the system		Logged into the web GUI with this IP address. It can be changed in the Config Networking page.
Netmask	The netmask of the IP address		
Ethernet MAC Address	This is the IEEE compliant MAC address of the Ethernet interface		The internal network bridge uses this MAC address

Wireless MAC Address	This is the IEEE compliant MAC address of the Wi-Fi interface		The WLAN MAC address
BSSID	The current associated BSSID of the Wi-Fi system		In AP mode: this will be the SAME as the Wireless MAC address. In STA mode and associated to an AP: this will be the value of the AP's MAC address. If the STA is not associated, this will state: "Not-Associated".

4.4 Status – WDS

This screen shows the status of the WDS links.

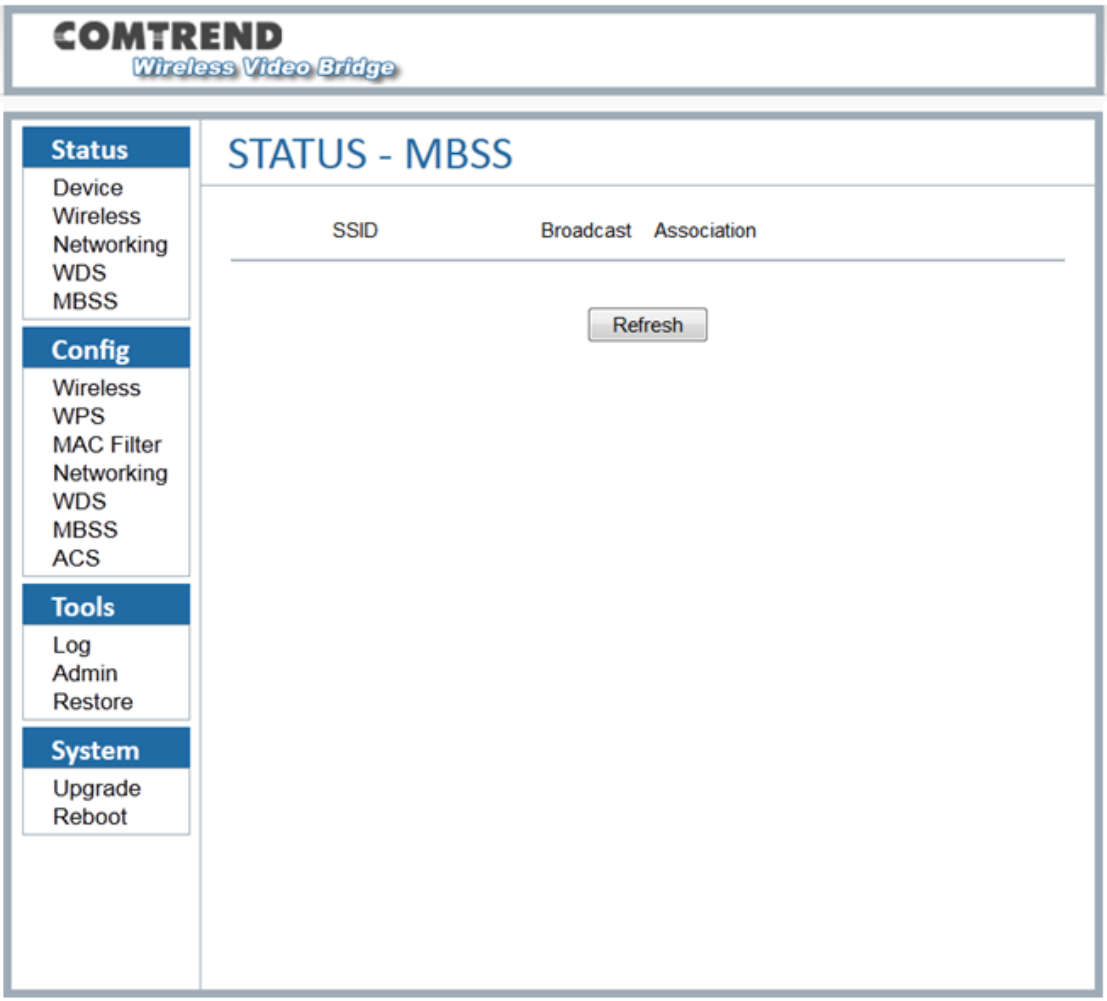


This option is not available on STA mode, the typical WDS link status includes:

- The interface name of the WDS link, the name is managed by the system automatically, usually it is: WDS0/WDS1/WDS2…so on.
- The WDS peer MAC address of the opposite side, this MAC address is same as the address which you are using when creating WDS links.
- The WDS link quality.

4.5 Status – MBSS

Displays the information of multiple Basic Service Set Identifiers (BSSIDs) created on the device: SSID, Broadcast, Association count and details of the station connected. This option is not available if the device is configured as a STA. For instructions on setting up WAP-5940 as a WDS using AP mode, please refer to Appendix B.



Menu Item	Description	Options	Detail
SSID	SSID of the MBSS		This will be the SSID of the wireless network. The other STA must be configured to the same SSID and security to connect to the Virtual AP.

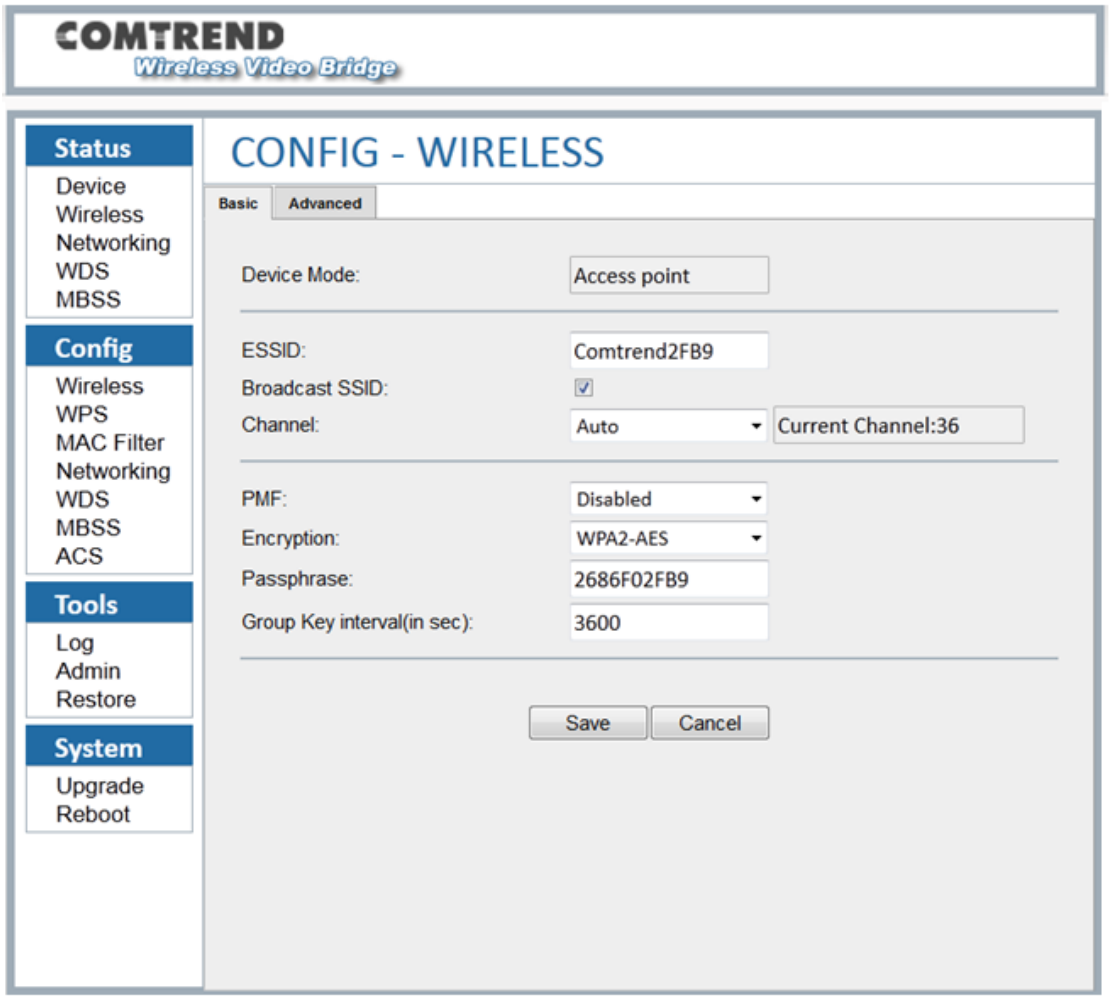
Broadcast	Enabled or disabled SSID broadcast	TRUE	SSID will be broadcasted
		FALSE	Wi-Fi devices can't scan out this SSID
Association	Associated STA number	>=0	The number of STAs which are connected to the Virtual AP

Chapter 5 Config

5.1 Config - Wireless

This screen has two tab pages, "Basic" and "Advanced".

Basic

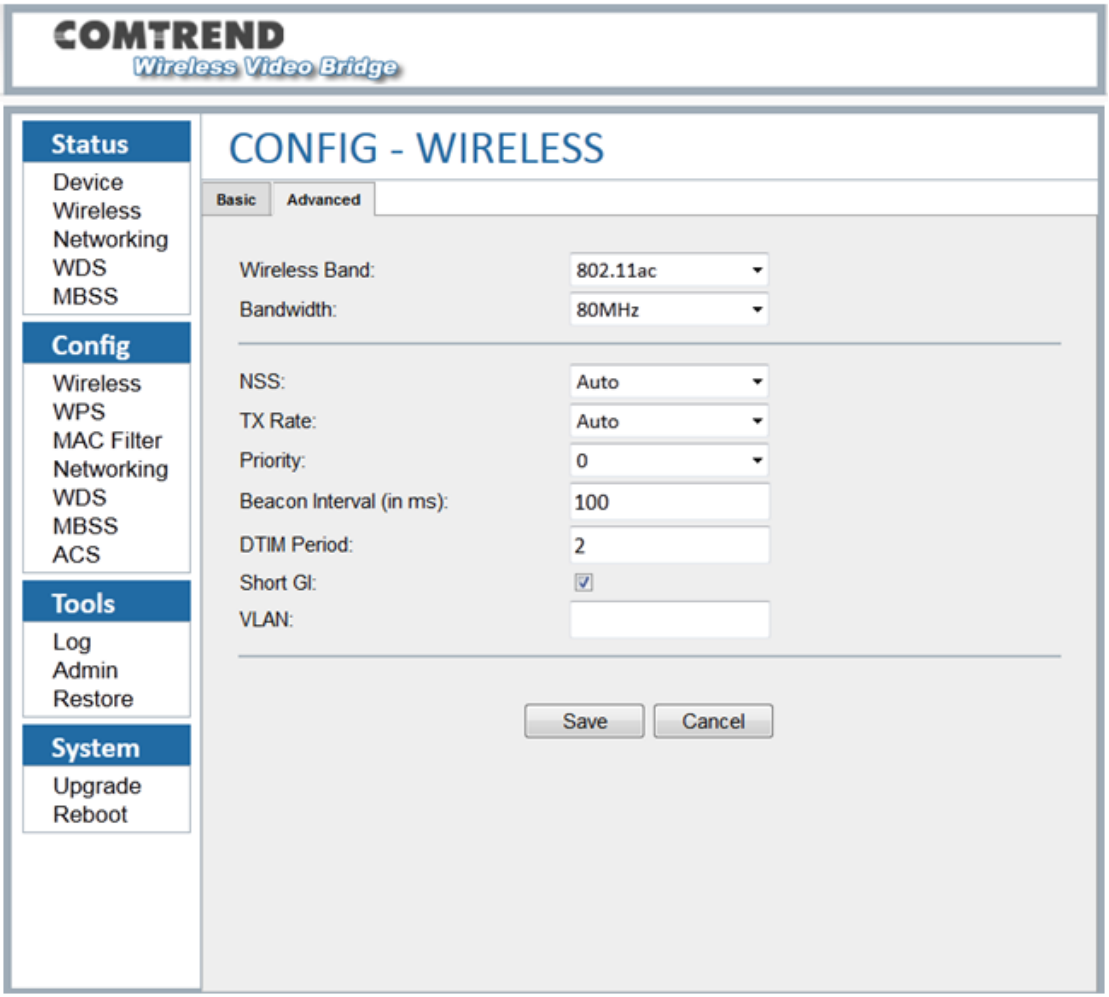


Menu Item	Description	Options	Detail
Device Mode	AP or STA mode	Access Point	Device Acts as Access Point
		Station	Device Acts as Station

ESSID	SSID of the AP	Can be set to desired SSID name	This will be the SSID of the wireless network. The STA must be configured to the same SSID and security (see below) to connect to the AP.
Channel	Available 5Ghz channels based on region setting	36-48, 149-165	5.180-5.240, 5.745-5.825 GHz are the supported frequency ranges
PMF	Protected Management Frames		Sets the 802.11w / PMF capability. Applies to AP
Encryption	802.11 compliant authentication and encryption	WPA2/AES	The STA must use WPA2 encryption. This mode is recommended.
		NONE-OPEN	Disables encryption (OPEN mode)
		WPA2 + WPA (Mixed mode)	The STA can use WPA or WPA2 encryption
		WPA2/AES Enterprise	The STA must use WPA2 encryption, and authentication via RADIUS server
		WPA2 + WPA Enterprise	The STA can use WPA or WPA2 encryption, and authentication via RADIUS server

Passphrase	The current passphrase. Applies to AP only.		
Group Key interval(in sec)	Group key renewal interval for enterprise security	Group key interval needs to be between 0 and 43200	This is the interval at which the group key is renewed for clients associated to this SSID

Advanced



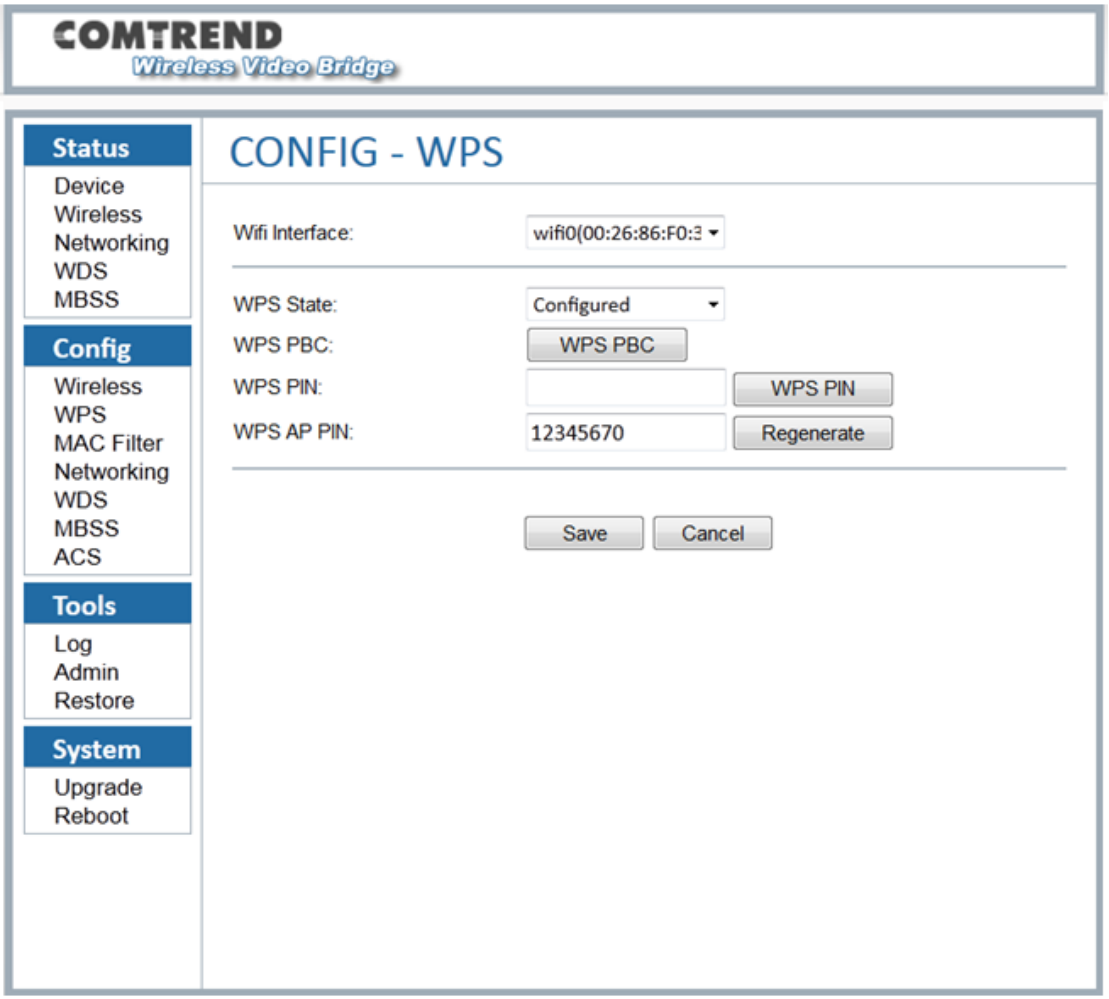
Menu Item	Description	Options	Detail
Wireless Band	Frequency Band to be used	802.11a	802.11a 5 GHz operation
		802.11an	802.11an 5 GHz operation

		802.11ac	802.11ac 5 GHz operation
Bandwidth	Per the 802.11a or 802.11an or 802.11ac standard	20 MHz	20 MHz operation
	Per the 802.11an or 802.11ac standard	40 MHz	40 MHz operation
	Per the 802.11ac standard	80MHz	80 MHz operation
NSS	The maximum number of spatial streams	Auto 1 2 3 4	
Tx Rate	Transmitted data rate	Not supported for 802.11a standard	
		Auto or MCS0 ~MCS76 for 802.11an standard	Auto Rate Control, MCS 0-76
		Only Auto option available for 802.11ac standard when NSS is set to Auto. When NSS is not set to Auto, MCS0~MCS9 options are available.	
Priority	The priority is used to differentiate traffic between different SSIDs	0~3	

Beacon Interval	Set the interval of the beacon		How often the device sends a Beacon. The interval should be between 25 and 5000. The default value is 100.
DTIM Period	Delivery Traffic Indication Message		The DTIM period indicates how often clients serviced by the access point should check for buffered data awaiting pickup on the access point. The value should between 1 and 15.
Short GI	Guard Intervals	Checked	The 802.11n draft specifies two guard intervals: 400ns (short) and 800ns (long). The GI is 400ns.
VLAN	Virtual Lan for different interface	1-4096	

5.2 Config – WPS

Connect to AP or STA without selecting an SSID and inputting a Passphrase.

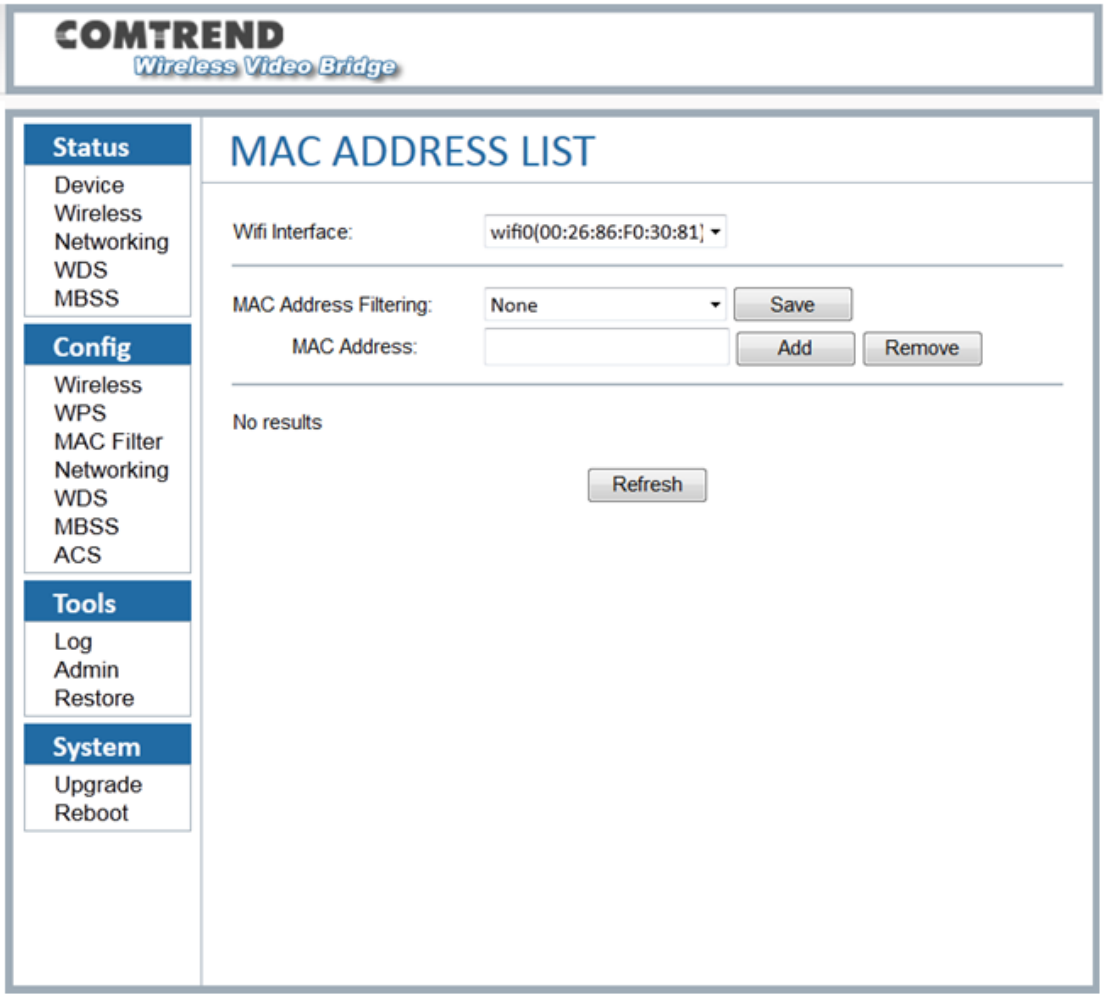


Menu Item	Description	Options	Detail
WPS State	Set WPS states	Disabled	WPS disabled
		Not configured	WPS enabled User can remotely change AP's wireless settings…SSID, Encryption and Passphrase for example.

		Configured	User needs to fill certain parameters to start WPS connection
WPS PBC	WPS push button		Push button to start WPS connection
WPS PIN	For Web UI pin WPS pin mode	Character string	This will be the PIN used for Web UI WPS pin mode. STA must have same pin.
WPS AP PIN			STA must have same PIN and press same Web UI button within 2 minutes. It is recommended to use the external WPS push button on the device.

5.3 Config – MAC Filter

This screen shows the MAC addresses filtering configurations that are used for the AP.



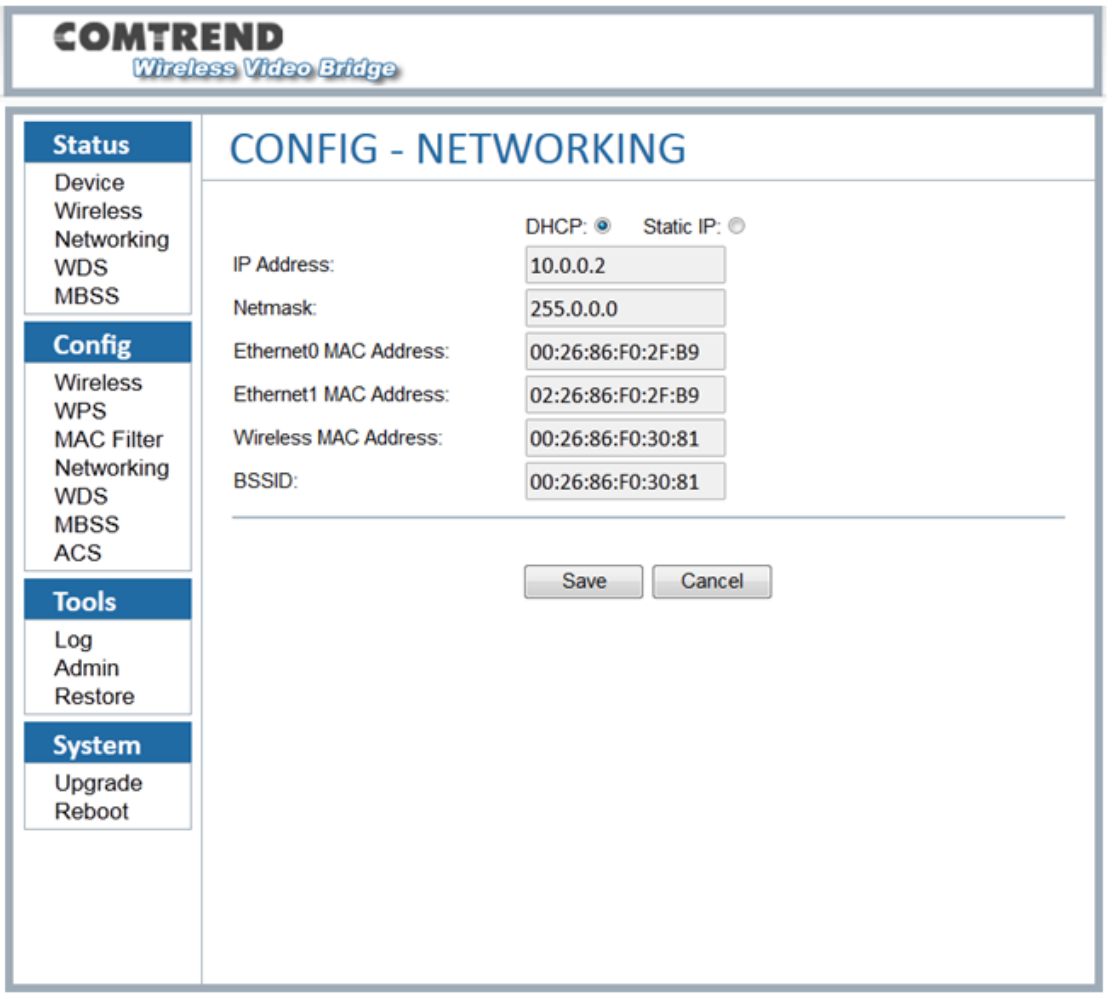
Menu Item	Description	Options	Detail
Wifi Interface	Real wireless device name and MAC Address in CPE		
MAC Address Filtering	The device filter MAC address	NONE	The AP can block a selected station from associating based on its MAC (hardware interface) address.

			"NONE"= Disable MAC address filtering.
		White list mode	Accept a STA association request unless the MAC address for that STA has been blocked
		Black list mode	Block a STA association request unless the MAC address for that STA has been authorized
MAC Address	Verify the MAC address		Checks whether the MAC address can be validated
MAC Address List	List the authorized or denied MAC addresses		According to the MAC address filter "Authorize if not denied" filter lists the denied MAC addresses. "Deny if not authorized" filter lists the authorized MAC addresses.

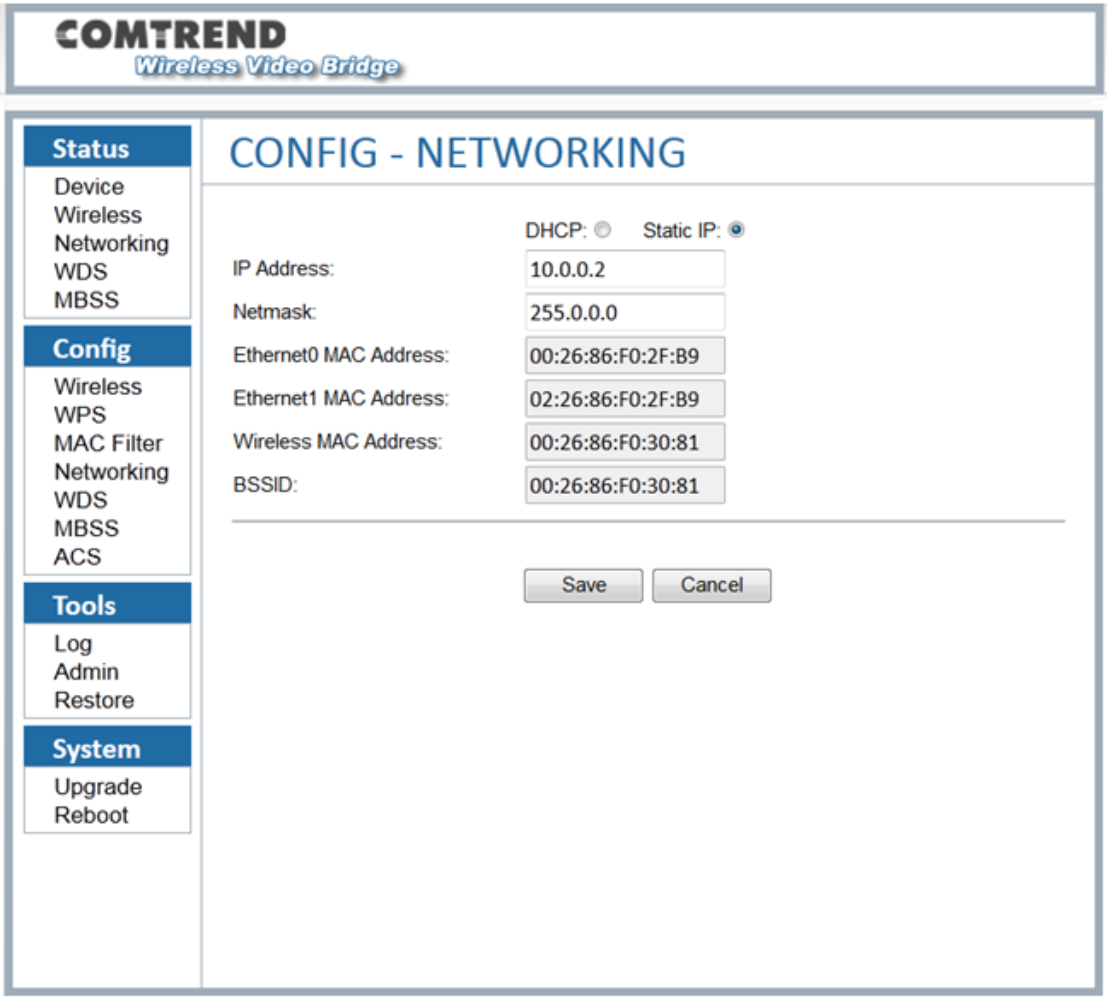
5.4 Config – Networking

These screens show the networking configuration.

DHCP



Static IP

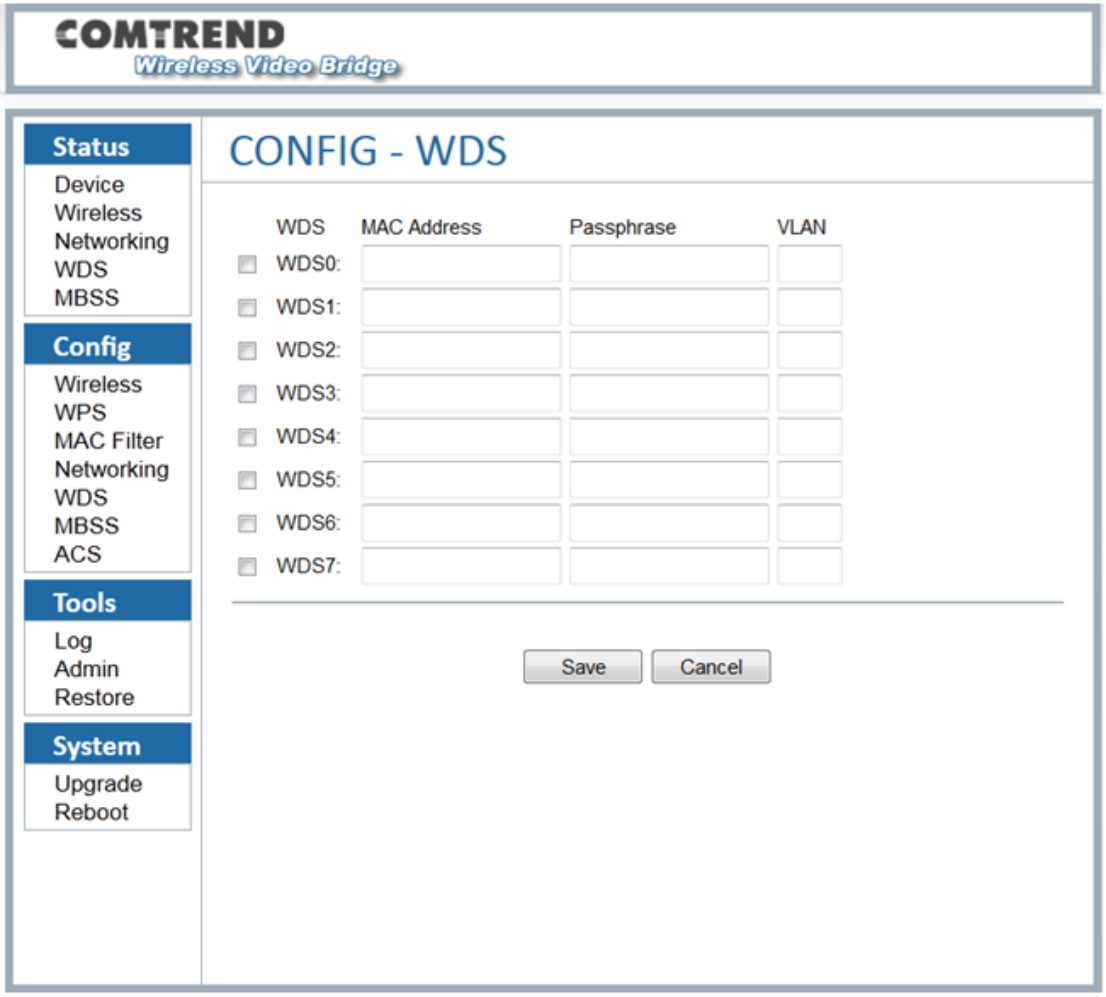


Menu Item	Description	Options	Detail
DHCP or Static IP	Set the network configuration to DHCP or Static IP	DHCP	The device will try to get its IP address with DHCP from a device like a router
		Static IP	The device will use the static IP address
IP Address	The IP Address of the system		This can be changed from this interface, by editing this field. If the device is using DHCP, the IP address is not allowed to change.

			CAUTION: After selecting "Save", the IP Address will change IMMEDIATELY. The Web UI must be pointed at the new address in order to continue your Web UI Session.
Netmask	Netmask of the IP address		
Ethernet MAC Address	This is the IEEE compliant MAC address of the Ethernet interface		The internal network bridge uses this MAC address. This cannot be changed.
Wireless MAC Address	This is the IEEE compliant MAC address of the Wi-Fi interface.		The WLAN MAC address. This cannot be changed.
BSSID	The current associated BSSID of the Wi-Fi system.		In AP mode: this will be the SAME as the Wireless MAC address. In STA mode and associated to an AP: this will be the value of the AP's MAC address. If the STA is not associated, this will state: "Not-Associated".

5.5 Config – WDS

This screen shows the configuration of the WDS links.



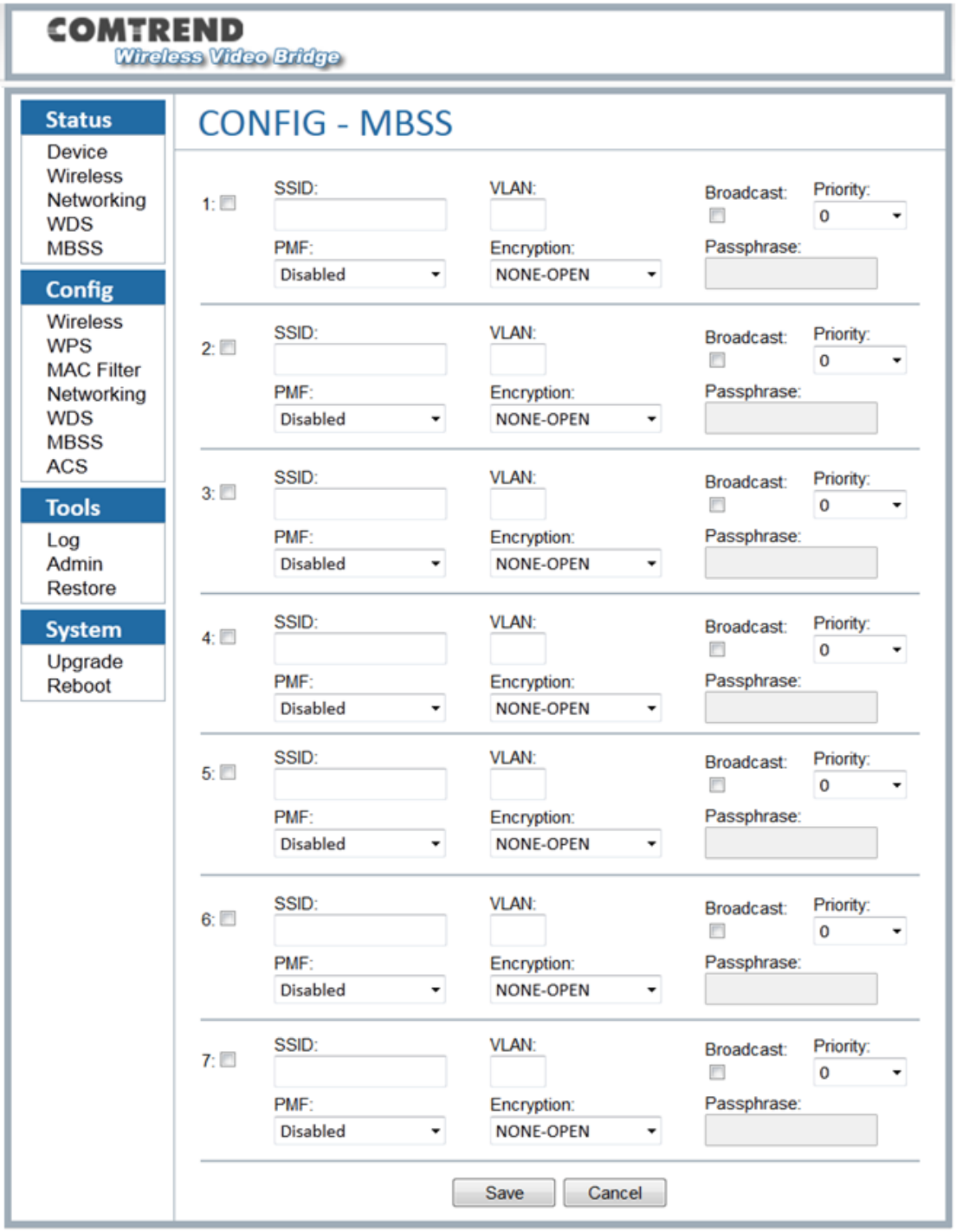
This option is not available if the device is configured as a STA.

Menu Item	Description	Options	Detail
WDS checkbox	To determine if the WDS link is enabled	Checked	The WDS link will be stored to a file after clicking the Save Button
		Not Checked	The WDS link will be discarded after clicking the Save Button

MAC Address		48bit MAC address	The WDS peer MAC address on the opposite side
Passphrase		64 ASCII PSK	Wi-Fi devices can see the SSID in scan. Now the passphrase string is displayed as "*******" instead.
		Empty	The WDS link does not have security
VLAN	Virtual Lan for different interface	1-4096	

5.6 Config – MBSS

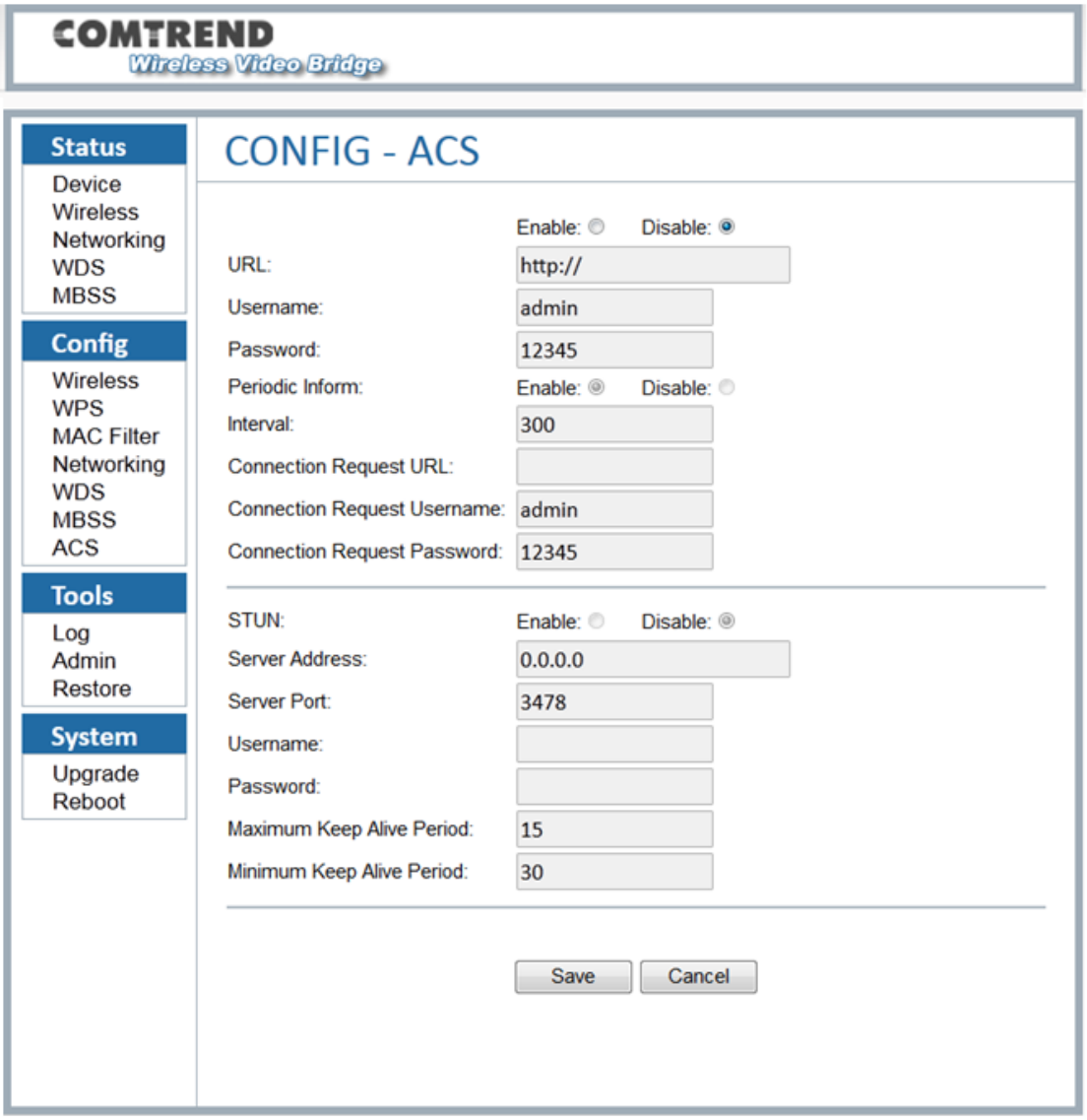
One can create multiple Basic Service Set Identifiers (BSSIDs) on a device initially configured as an access point (AP). This capability is not available on a device configured as a STA. The first step in creating an additional BSSID is to create the wireless interface device for that BSSID.



Menu Item	Description	Options	Detail
SSID	SSID of the MBSS		This will be the SSID of the wireless network. The other STAs must be configured to the same SSID and security to connect to the Virtual AP.
VLAN	Virtual Lan for different interface	1-4096	
Broadcast	Enabled or disabled SSID broadcast	Checked	SSID will be broadcast
		Unchecked	Wi-Fi devices can see the SSID in scan
Priority	The priority is used to differentiate traffic between different SSIDs	0 is highest priority. 3 is lowest priority.	
PMF	Protected Management Frames		Sets the 802.11w / PMF capability. Applies to AP
Encryption	802.11 compliant encryption	NONE-OPEN	Disables encryption (OPEN mode)
		WPA2/AES	The STA must use WPA2 encryption. This mode is recommended.
		WPA2+WPA (mixed mode)	The STA can use WPA or WPA2 encryption
Passphrase	The passphrase applies to this MBSS SSID		

5.7 Config – ACS

WAN Management Protocol CWMP (TR-069) allows an Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device. Select desired values and click **SAVE** to configure TR-069 options.



Menu Item	Description	Options	Detail
Enable	Enable TR-069 daemon connection to ACS	Select to enable	
Disable	Disable TR-069 daemon connection to ACS	Select to disable	

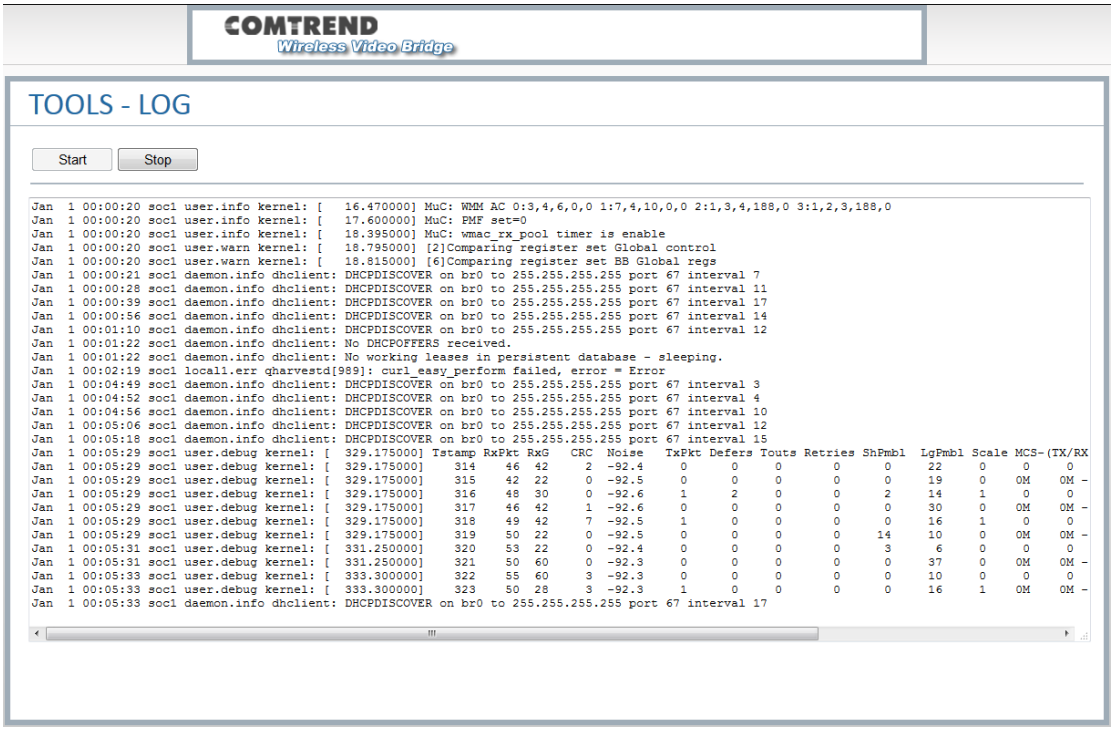
URL	IP address and port the device uses to connect to the ACS		
Username	Username used to authenticate on ACS		
Password	Password used to authenticate on ACS		
Periodic Inform	Activate / Deactivate the info message to ACS server		Unit is second(s)
Interval	Periodic time interval of sending the info message		
Connection Request URL	The path for the connection from the ACS to the CPE. It is recommended to keep the default setting.		
Connection Request Username	Username used to authenticate an ACS making a Connection Request to the CPE		
Connection Request Password	Password used to authenticate an ACS making a Connection Request to the CPE		
STUN	Activate the TR-111 function	Select to enable	
	Deactivate the TR-111 function	Select to disable	

Server Address	IP address of device used to connect to the ACS which support STUN		
Server Port	Port of device used to connect to the ACS which support STUN		
Username	Username used to authenticate on ACS which support STUN		
Password	Password used to authenticate on ACS which support STUN		
Maximum Keep Alive Period	The maximum connect duration to the ACS server		Unit is second(s)
Minimum Keep Alive Period	The minimum connect duration to the ACS server		Unit is second(s)

Chapter 6 Tools

6.1 Tools – Log

This page has the ability to directly view the PHY statistics of the device.



Pressing the "Start" button will start a 10 second polling log. This data can be useful to assist in debugging the system.

After selecting "Start", the page will look similar to the image above. The logging will stop after pressing the "Stop" button. If the IP address is changed or if the device is shut off, this page will give an error message if logging was in progress. To recover the session, please press the "Start" button again.

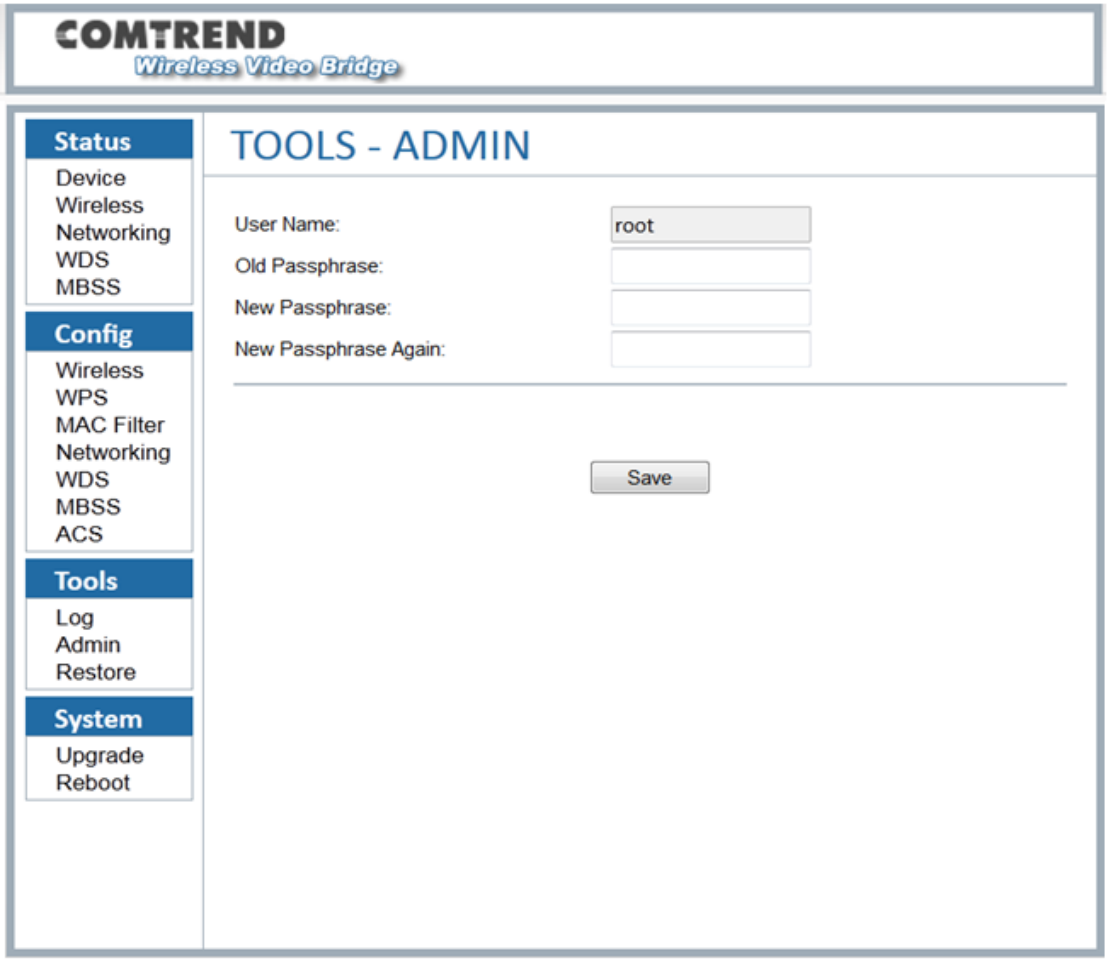
This interface takes data from an internal OS file, so intermittently; there may be management messages that show up in this log.

Metric	Description	Comments
Tstamp	This is the system time of the measurement taken from the internal system clock	
RxPkts	This represents the number of packets that were successfully received over 1 second intervals. Each line represents 1 second of time.	
RxGain	This is the higher receiver gain value that was recorded on successfully received packets during this measurement interval. If no packets were received, this may be an invalid number.	The maximum value of RxGain is 62
CRC	This is the number of CRC errors received over the 1 second measurement interval	If (CRC/Rx Packets) > 10-20%, then the channel condition or link quality is poor. This is possibly due to interference, another Wi-Fi network or being too far for the current configuration to be reliable.
Noise	This is the MAX receiver noise floor as measured over this 1 second interval	This value is an internal noise calculation, not external. In normal operation it will vary between 20 and 70.
TxPkts	This is the number of successfully transmitted packets over the last 1 second interval.	

Defers	This number counts the number of times an attempted transmission was deferred due to the medium being busy. This is helpful in determining if an environment is very busy.	Defers are common in busy WiFi environments
Tout	This is an indicator of Tx packet timeout	Timeouts are not common. The Packet could not find a time slot to transmit.
Retries	This counts the number of transmission retries that have occurred over the last one second. This is primarily due to the lack of acknowledgements from the partner device.	On the transmit side, note that the general packet flow for error is as follows: Defer Retry Timeout
ShPre	This counts the number of Short Preamble Detection Errors	These are very common in high throughput conditions
LgPre	This counts the number of Long Preamble Detection errors	The wireless received a signal which passed the short preamble, but failed the more complex long preamble. These are less common than short preamble errors.
Rate	This is a legacy measurement for rate and is not currently used	

6.2 Tools – Admin

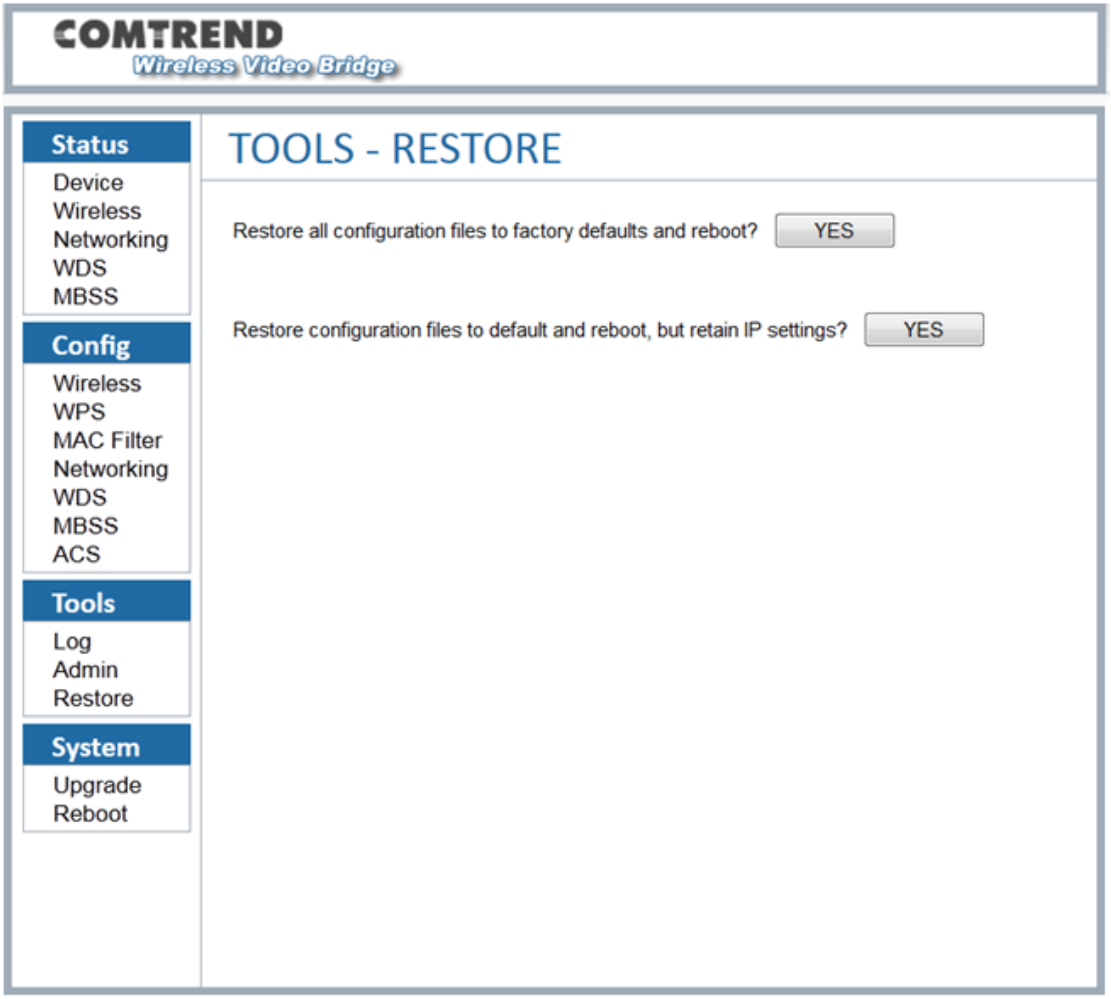
This page is for administration of the user passwords.



Menu Item	Description	Notes
User Name	The user name for login	Only for the login privilege
Old Passphrase	Enter the original password of the user name	
New Passphrase	Enter the new passphrase	
New Passphrase Again	Enter the new passphrase again	It should be the same as the "New Passphrase"

6.3 Tools – Restore

The Tools Restore page is for users to restore all the configurations of the device to factory defaults. There is also the option to restore the configuration files and reboot whilst retaining the IP settings.

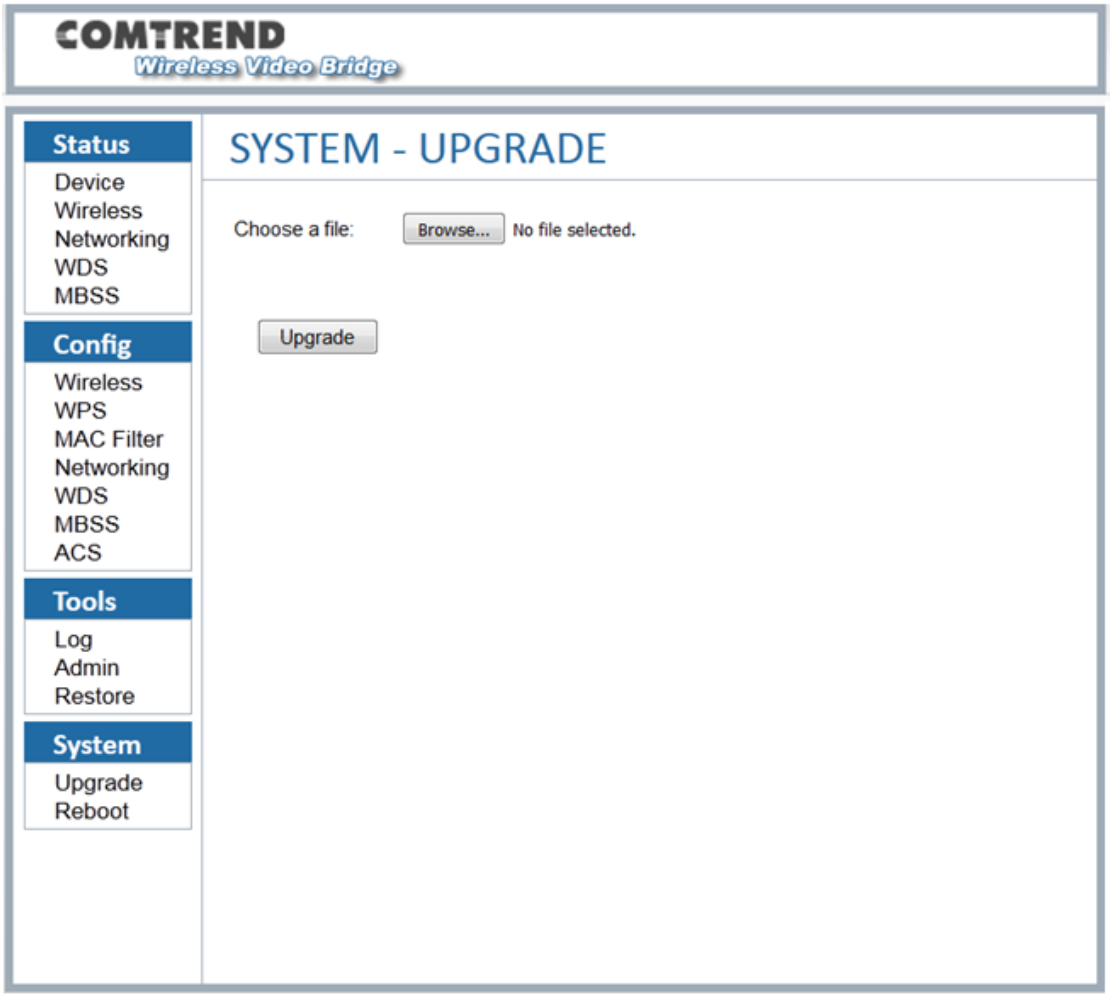


The Restore function also restores the password of the login user.

Chapter 7 System

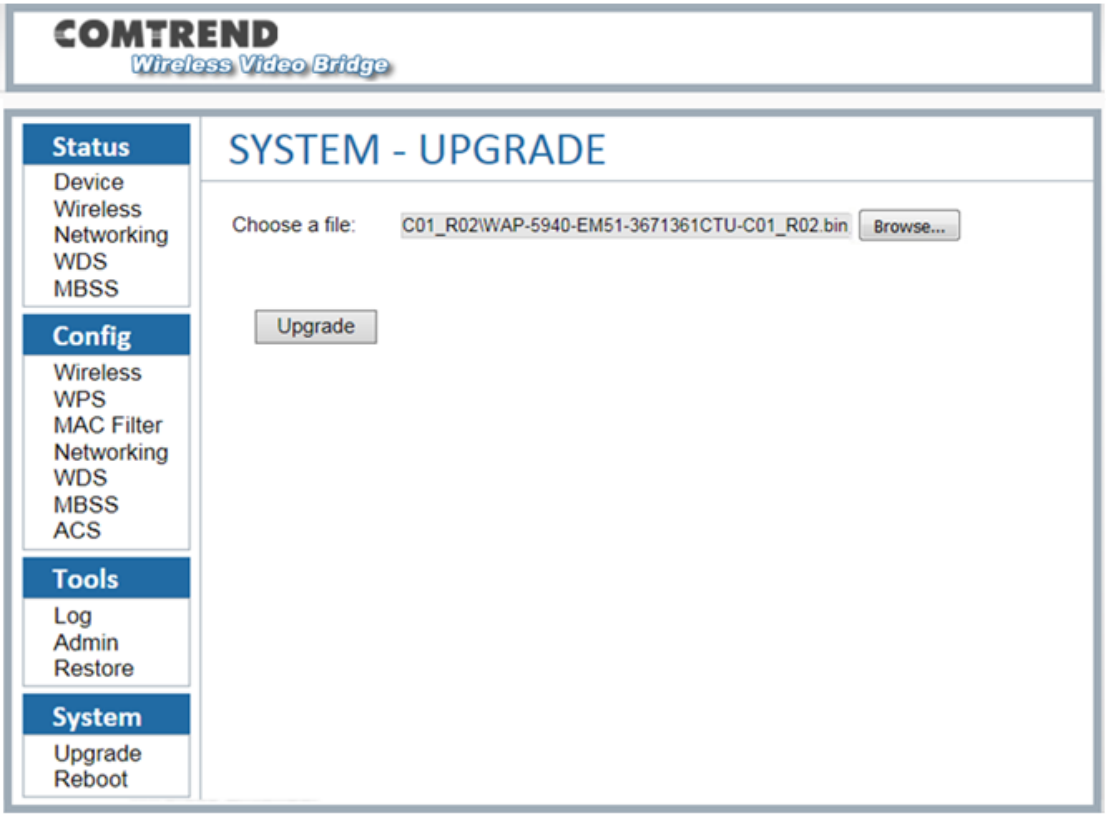
7.1 System – Upgrade

The System Upgrade page is for users to update the firmware on the device.



This page will upload a binary image file. **Please use bin file to upgrade which is named like "WAP-5940-EM51-3671361CTU-CXX_RXX.bin".**

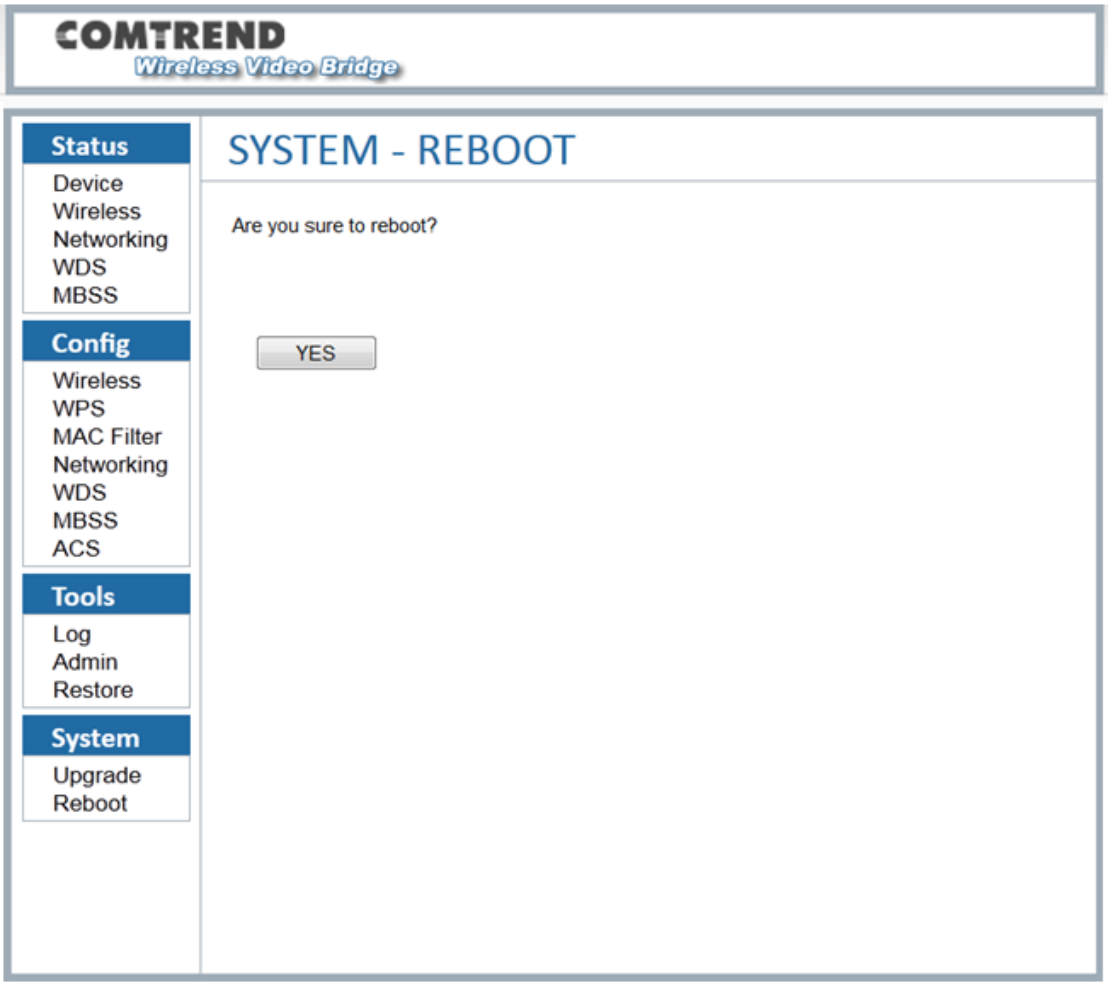
When you select the file and click "Upgrade", the "Upgrade" button will be disabled and the page will display "Loading the image file.....Please wait", please wait for 2 minutes. **Please be patient and do not power off the unit during this process. Do not close the upgrade webpage.**

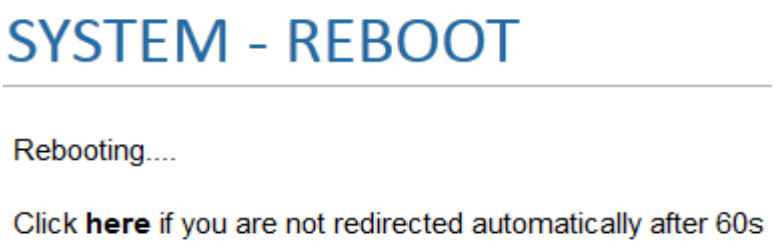


When the firmware has been upgraded successfully, you will be automatically directed to the reboot page.

7.2 System – Reboot

The System Reboot page is for users to reboot the device.





Appendix A - Specifications

Hardware Interface

- AP/Station Switch x 1
- RJ-45 X 2 for Giga Ethernet port
- Reset Button X 1
- WPS button X 1
- 4x internal MIMO antenna
- Power switch X 1
- Power Jack X 1

Standard

- 802.11a/n/ac
- 802.11i (WEP, WPA/WPA2, RADIUS)
- 802.11d
- 802.11e (WMM, WMM-PS)
- 802.11w
- 802.11h
- 802.11k
- 802.11r
- 802.11s (Draft)

Rates are for 256 QAM

- 80MHz: 1.7Gbps
- 40MHz: 800Mbps
- 20MHz: 346.8Mbps

Environment Condition

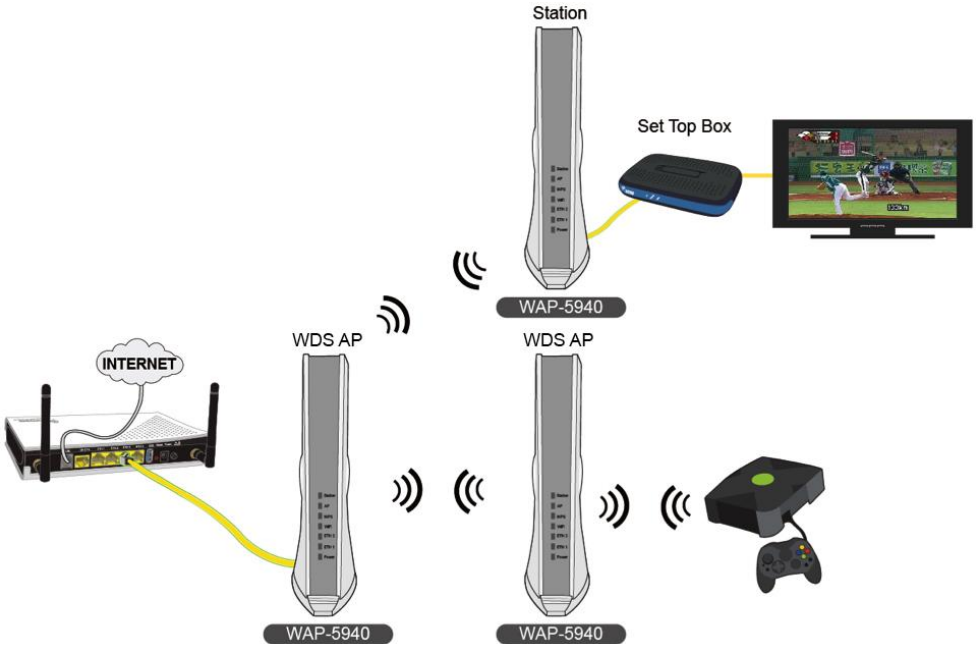
Operating temperature .....0 ~ 40 degrees Celsius

NOTE:	Specifications are subject to change without notice.

Appendix B - WAP-5940 WDS configuration using AP mode

I. A **Wireless Distribution System** (**WDS**) is a system that enables the wireless interconnection of access points in an IEEE 802.11 network. It allows a wireless network to be expanded using multiple access points without the traditional requirement for a wired backbone to link them.

II. **Network topology:**



III. **WAP-5940** is a high power Quantenna 4x4 AC chipset that delivers premium wireless capabilities for video streaming to remote locations at home and office. In this document, it will explore the key benefit of WDS feature to expand wireless coverage.

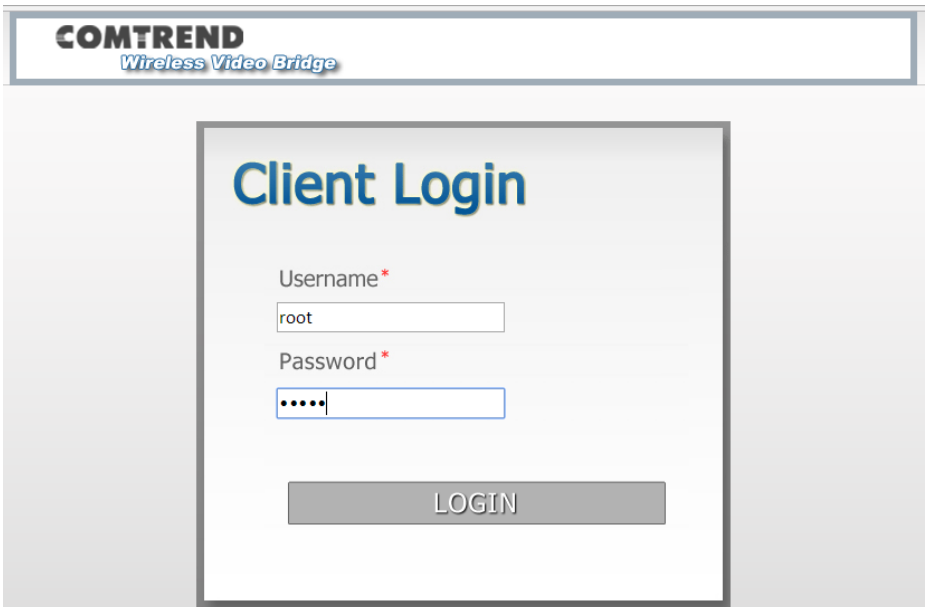
Note: The default IP address of the device, if not connected to a network with a DHCP server, is http://10.0.0.2 for an Access Point configuration.

If the device is going to have static IP address, do not forget to change the other WAP-5940 IP address to avoid IP conflicts in the network. This will also give you the ability to reach each WAP-5940 individually. By default, WAP-5940 is configured to use DHCP to obtain its IP address.

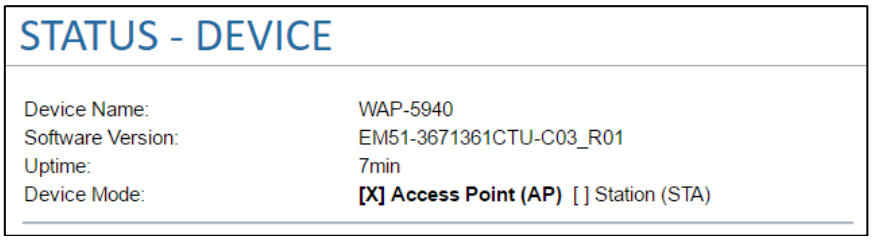
IV. **Configuration:**

Log into the WAP-5940 using the default IP and username/password below. You will need to set a static IP address on your PC to connect. You can assign IP 10.0.0.10 on your PC to connect to the WAP-5940.

http://10.0.0.2
Username: root
Password: 12345

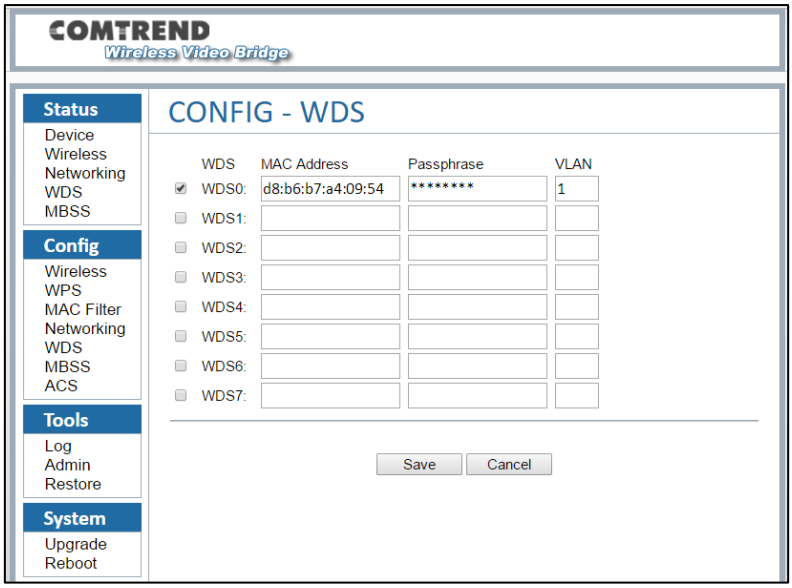


a. Make sure the device mode is set to "Access Point (AP)" under device status.

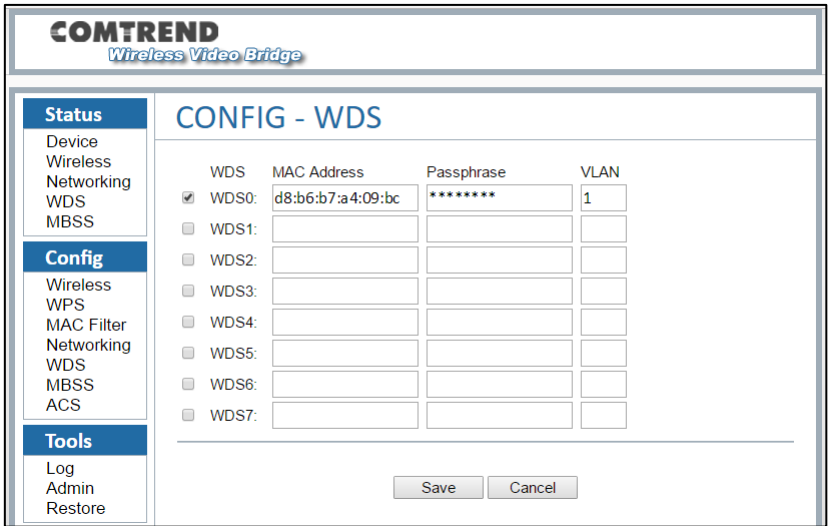


b. Go to the WDS tab and enable WDS link by checking the box then entering the MAC Address of the other WAP-5940. Click "Save" once done.

Note: you must enter the VLAN ID (for best practice enter the native VLAN = 1) and not necessity to use Passphrase (if you do, minimum passphrase ASCII character is 64).



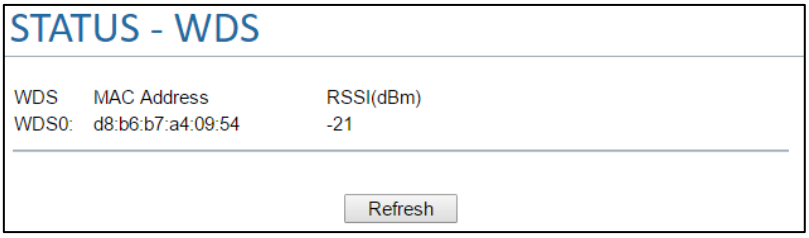
c. Do the same on the other WAP-5940. Click "Save" once done.



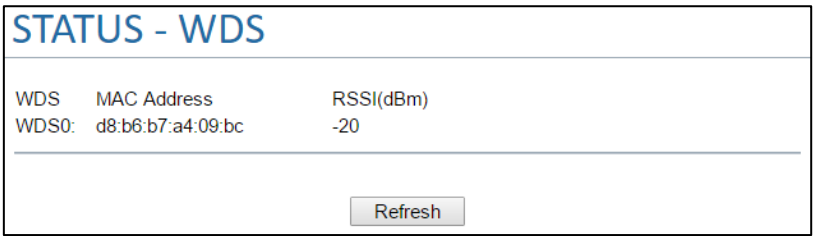
d. Reboot both devices.

e. Check the Status of the WDS link:

- First WAP-5940 status:



- Second WAP-5940 status:



f. Configure the wireless setting on both WAP-5940 before connecting to your network.