

Bridge Setup (V1 HW to V2 HW)

This document will help with the setup of a wireless bridge using EnGenius products without the EnJet technology. V1 of the EnGenius bridging hardware does not support the EnJet technology.

The step guide will be how to setup a PtP (Point to Point) wireless link.

In the figure a PtP wireless bridge is setup to connect to remote networks.

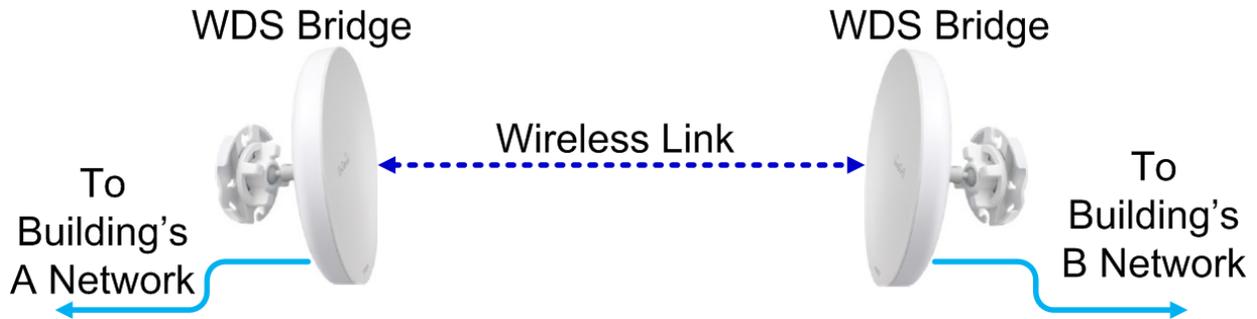


Figure 1: Wireless Bridge for two Networks

In the figure below a PtP wireless bridge is setup to connect a hardwired IP camera to an NVR wirelessly.

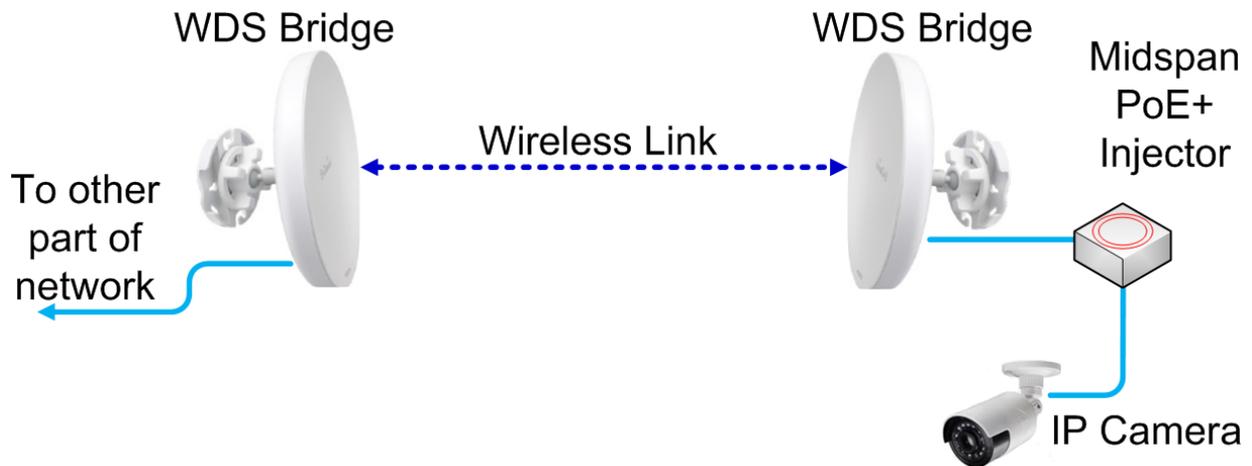
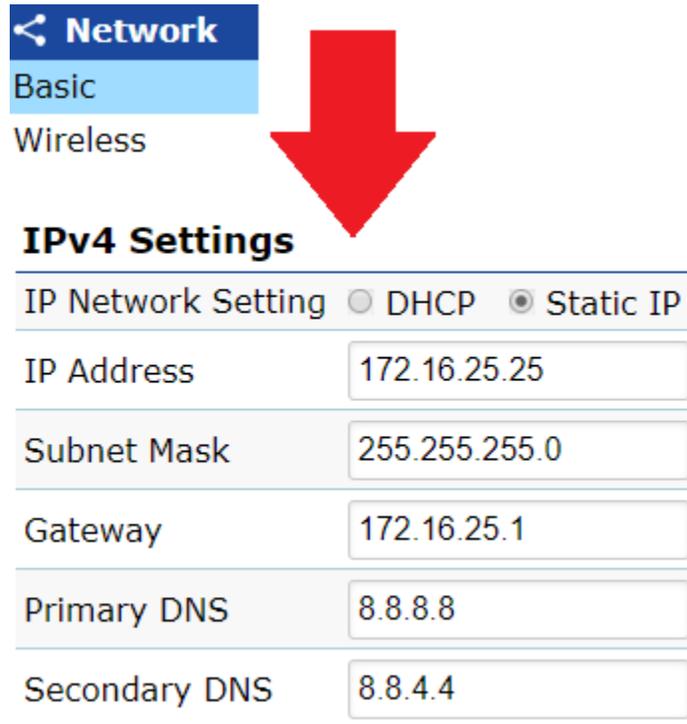


Figure 2: Wireless Bridge for IP Camera

Note: PtP links will yield the best performance. We recommend that network requirements be calculated before deploying a PtMP wireless bridge links.

Step up of HW V1

The first step after login into the unit is to give the unit a static IP address. It is recommend that the unit be given a static IP address in the same subnet as the management subnet and outside the DHCP scope of the DHCP server.



The screenshot shows a web interface for network configuration. On the left, there is a sidebar with a blue header 'Network' containing a back arrow, and two sub-items: 'Basic' (highlighted in light blue) and 'Wireless'. A large red arrow points from the 'Basic' item down to the main content area. The main content area is titled 'IPv4 Settings' and contains a table of configuration options. The 'IP Network Setting' is set to 'Static IP' (selected with a radio button). Below this are input fields for 'IP Address' (172.16.25.25), 'Subnet Mask' (255.255.255.0), 'Gateway' (172.16.25.1), 'Primary DNS' (8.8.8.8), and 'Secondary DNS' (8.8.4.4).

IPv4 Settings	
IP Network Setting	<input type="radio"/> DHCP <input checked="" type="radio"/> Static IP
IP Address	172.16.25.25
Subnet Mask	255.255.255.0
Gateway	172.16.25.1
Primary DNS	8.8.8.8
Secondary DNS	8.8.4.4

Figure 3: Static IP address applied to unit

After setting the IP address click the Apply button at the bottom of the screen. This will que the setting, but the setting is not fully applied unit you follow the next steps.

The screenshot shows the EnGenius EnStationAC web interface. The top navigation bar includes the EnGenius logo, a language dropdown set to 'English', and buttons for 'Changes: 0', 'Reset', and 'Logout'. The main content area is divided into a left sidebar and a main settings panel. The sidebar contains menu items: Overview, Device Status, Connections, Network (selected), Basic, Wireless, Management, Advanced, Time Zone, WiFi Scheduler, Tools, System Manager, Account, Firmware, and Log. The main settings panel is titled 'IPv4 Settings' and includes a radio button for 'Static IP' (selected). Below this are input fields for IP Address (10.0.89.63), Subnet Mask (255.255.255.0), Gateway (10.0.89.1), Primary DNS (8.8.8.8), and Secondary DNS (8.8.4.4). The 'IPv6 Settings' section has a checked 'Link-local Address' option and empty input fields for IP Address, Subnet Prefix Length, Gateway, Primary DNS, and Secondary DNS. The 'Spanning Tree Protocol (STP) Settings' section has radio buttons for 'Enable' (selected) and 'Disable', and input fields for Hello Time (2), Max Age (20), Forward Delay (15), and Priority (32768). At the bottom of the settings panel, a red arrow points to a blue 'Save' button with the text 'Save current setting(s)'.

Figure 4: Apply Button at Bottom of screen

There are two locations to apply the settings from the queue to the running and startup config of the unit. One is located where arrow is pointing in the figure below 1A, and the other is located where 1B is shown in the figure below.

The screenshot shows the EnGenius web interface for an ENS500-AC device. The top navigation bar includes the EnGenius logo, a language dropdown set to 'English', and buttons for 'Changes: 5', 'Reset', and 'Logout'. A sidebar on the left contains menu items for Overview, Network, Management, and System Manager. The main content area is titled 'Wireless Settings' and includes sections for 'Wireless Settings' (Device Name: ENS500-AC, Country/Region: USA), 'EnJet' (Status: Enable), and '5GHz (A/N/AC)' settings (Operation Mode: Access Point, Green, Channel HT Mode: 40MHz, Transmit Power: Auto, Bit Rate: Configuration, Client Limits: Enable, 127, AP Detection: Scan, Distance: 1 (0.6 miles), AP Time Slot: Auto, Station Priority: High). At the bottom, a 'Wireless Settings - Access Point' table shows one entry with SSID 'EnGenius79C366' and Security 'None'. A yellow confirmation dialog is overlaid at the bottom right, displaying 'Waiting for changes to be applied (5)' and buttons for 'Apply' and 'Revert'. Two red arrows point to the 'Changes: 5' button (labeled '1A') and the 'Apply' button (labeled '1B').

Figure 5: Two locations to save the settings

If Changes is clicked (shown from figure 5 above) you will be directed to the Configuration/Changes screen. To apply the settings click the apply button, as shown in the figure below.

Configuration / Changes

Legend:

Section added Section removed Option changed Option removed

```
dhcp.cfg02411c
dhcp.cfg02411c.domain=ENS500-AC

network.lan
network.lan.hostname=ENS500-AC

wireless.wifi1
wireless.wifi1.ath_count=0
wireless.wifi1.channel_config_status=1

wireless.wifi0_mgmt
wireless.wifi0_mgmt.disabled=1
```

Apply **Revert**

Figure 6: Apply Button

After clicking the Apply button the changes will be applied to the unit. The unit will have to reboot to apply the settings.

Configuration / Apply

Applying changes

 Waiting for changes to be applied...

The following changes have been committed:

Legend:

Section added Section removed Option changed Option removed

```
wireless.wifi0_mgmt
wireless.wifi0_mgmt.disabled=1
```

Figure 7: Applying Changes

If the Apply button is clicked, as shown in figure 5, then the settings will be applied to the unit. The unit will have to reboot for the settings to take effect.

Please note that only the Changes button will give the option to revert the settings in the que before applying the settings to the unit. Only the Apply button, shown in figure 5 1B, will bypass the Configuration/Changes screen and the option to revert changes is not given.

Configuration / Apply

Applying changes



Waiting for changes to be applied...

The following changes have been committed:

Legend:



Section added



Section removed



Option changed



Option removed

```
wireless.wifi0_mgmt  
wireless.wifi0_mgmt.disabled=1
```

Figure 8: Applying Settings

The next step is to note the 5GHz BSSID of the radio. This is important for the WDS Bridge connection to the HWv2 (EnJet) unit.

i Overview
Device Status
Connections



Device Information

Device Name	HWv1
MAC Address	
- LAN	88:DC:96:67:00:18
- Wireless LAN - 5GHz	88:DC:11:11:11:11
Country	USA
Current Local Time	Fri May 3 20:03:19 2019
Uptime	0h 52m 30s
Firmware Version	v3.5.5_c1.9.20
Management VLAN ID	Untagged
Registration Check Code	77777777

Figure 9: 5GHz BSSID of HWv1 unit

The next step is to set the unit for WDS Bridge. This is found under Network>Wireless>Operation Mode>WDS Bridge. Disable Green mode by unchecking the box to the left of the Green setting.

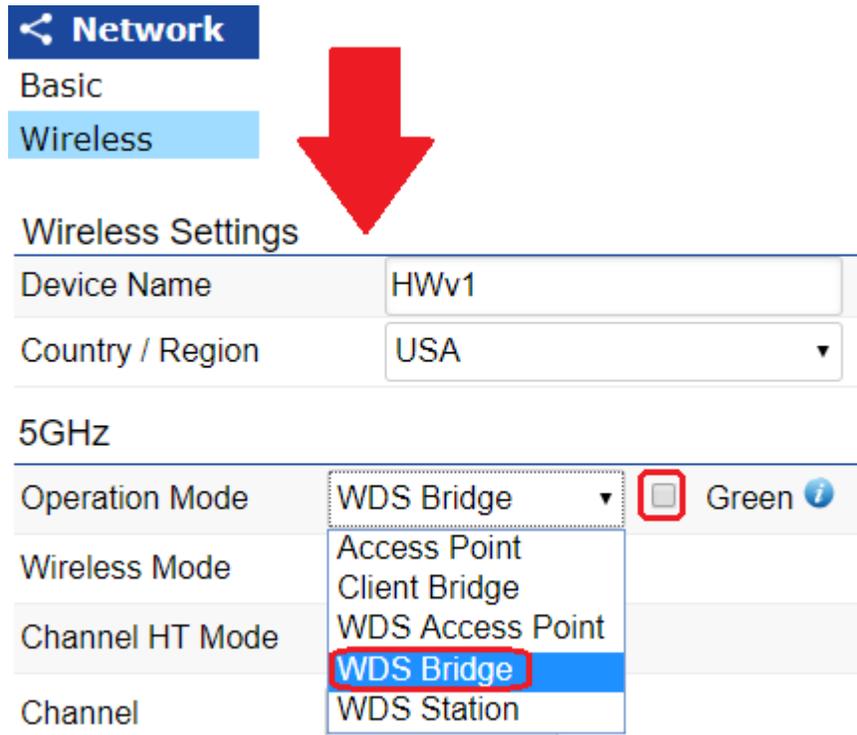


Figure 10: Settings WDS Bridge and Unchecking Green Mode

After unchecking the Green mode, scroll down to the bottom of the Wireless setup page and click the Save button.

The screenshot displays the EnGenius ENS500EXT-AC configuration interface. The top navigation bar includes the EnGenius logo, the device model 'ENS500EXT-AC Outdoor AP, 2T2R, 867Mbps', and buttons for 'Changes: 0', 'Reset', and 'Logout'. The left sidebar contains a menu with 'Management' selected. The main content area is titled 'Wireless Settings' and includes sections for '5GHz' and 'WDS Link Settings - 5GHz'. A red arrow points to the 'Save' button at the bottom left of the settings area.

Wireless Settings

Device Name: HWv1
Country / Region: USA

5GHz

Operation Mode: WDS Bridge Green
Wireless Mode: 802.11 AC/N
Channel HT Mode: 20MHz
Channel: Configuration
Transmit Power: 11 dBm
Bit Rate: Configuration
Client Limits: Enable Disable 127
Multicast to Unicast Stream Conversion: Enable Disable
AP Detection: Scan
Distance (0-30km): 0 (0miles)

WDS Link Settings - 5GHz

Security: None
AES Passphrase: 12345678 (8-63 ASCII characters or 64 hexadecimal digits)

Caution: NAWDS is enabled, please assign the Channel on both frequency bands manually for settings to take effect.

MAC Address Mode

MAC Address	Mode
: : : : :	Enable
: : : : :	Disable
: : : : :	Disable
: : : : :	Disable
: : : : :	Disable
: : : : :	Disable
: : : : :	Disable
: : : : :	Disable

RSSI Threshold

Status: Enable Disable
RSSI (Range: -100dBm ~ -60dBm): -85 dBm
Caution: Enabling RSSI Threshold disassociates wireless clients that fall below the configured RSSI threshold and may cause wireless clients to reconnect frequently. It is recommended to disable this feature unless you deem it absolutely necessary.

Management VLAN Settings

Status: Enable Disable 4094
Caution: If you encounter disconnection issue during the configuration process, verify that the switch and the DHCP server can support the new VLAN ID and then connect to the new IP address.

Save Save Current Setting(s)

Figure 11: Location of Save Button

Once the Save Button is clicked the unit will display the message as shown in figure 12. Click the Okay button and the unit will reboot. All other changes will require a two-step save/apply process.

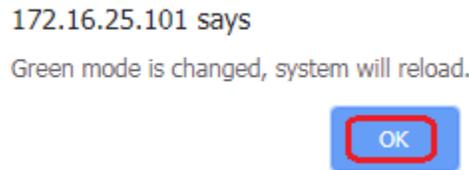


Figure 12: Green Mode disabled

Next step is to add the 5GHz BSSID of the other unit, in this case the HWv2, EnJet model, into the WDS Link Settings. It is also recommended that encryption be added as well. In the figure below the 5GHZ BSSID of the HWv2 model has been added to the list.

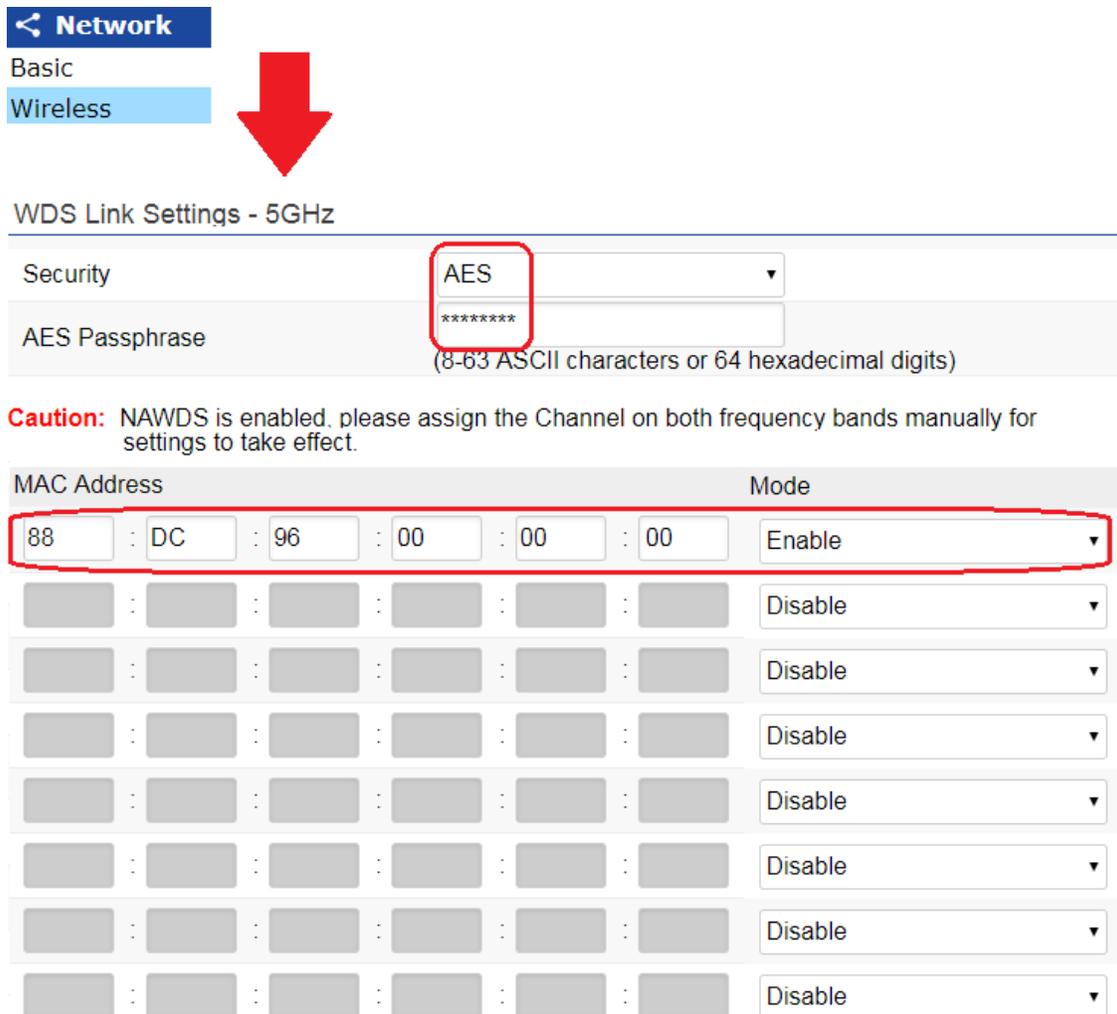


Figure 13: WDS Link Settings

Below are the best practices for HWv1 for WDS Bridge mode.

Note: Best practices is a starting guide on the configuration of the unit.

← Network
Basic
Wireless



5GHz	
Operation Mode	WDS Bridge <input type="checkbox"/> Green <i>i</i>
Wireless Mode	802.11 AC/N
Channel HT Mode	20MHz
Channel	Configuration
Transmit Power	11 dBm
Bit Rate <i>i</i>	Configuration
Client Limits	<input checked="" type="radio"/> Enable <input type="radio"/> Disable 127
Multicast to Unicast Stream Conversion	<input checked="" type="radio"/> Enable <i>i</i> <input type="radio"/> Disable <i>i</i>
AP Detection	Scan
Distance (0-30km)	0 (0miles)

Figure 14: HWv1 Best Practices Config

Best Practices in WDS Bridge mode are to use the smallest channel that you can and the lowest Tx output power you can as well. Please ensure the distance settings is set to zero as well.

Next is to configure the proper channel for the WDS Bridge link. Click the Scan button to the right of AP Detection to scan the wireless channels to determine the best channel to place the WDS Bridge link into. The figure below is found on the Network>Wireless>Wireless Settings page.

5GHz

Operation Mode	WDS Bridge	<input type="checkbox"/> Green i
Wireless Mode	802.11 AC/N	
Channel HT Mode	20MHz	
Channel	Configuration	
Transmit Power	11 dBm	
Bit Rate i	Configuration	
Client Limits	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
	127	
Multicast to Unicast Stream Conversion	<input checked="" type="radio"/> Enable i <input type="radio"/> Disable i	
AP Detection	Scan	
Distance (0-30km)	0	(0miles)

Figure 15: AP Scan

The results of the scan will populate similar to the list shown below.

Note: Depending on the RF environment this might take some time or multiple scans to see all DFS channels.

Site Survey

BSSID	SSID	Channel	Signal Level	Type	Security	Mode
88:DC:96:79:C3:4F		36	-55 dBm	11ac	None	Master
88:DC:96:79:C3:F0	EnGenius79C3F0	36	-75 dBm	11ac	None	Master
88:DC:96:41:F5:2A	EnGenius1	44	-29 dBm	11a/n	None	Master
92:DC:96:78:13:0B		48	-65 dBm	11ac	None	Master
8E:DC:96:78:13:0B		48	-64 dBm	11ac	None	Master
88:DC:96:4F:C3:D0		108	-45 dBm	11ac	None	Master
88:DC:96:23:36:4F		153	-35 dBm	11ac	None	Master
88:DC:96:79:C3:57	EnGenius79C357	108	-62 dBm	11ac	None	Master
00:04:56:A0:22:C0	L	36	-39 dBm	11ac	WPA2 -PSK	Master
88:DC:96:79:17:66	IEEE80211	36	-78 dBm	11ac	WPA2 -PSK	Master
88:DC:96:79:28:95	IEEE80211	36	-69 dBm	11ac	WPA2 -PSK	Master
88:DC:96:23:1A:23	EnGenius231A23	40	-65 dBm	11a/n	WPA2 -PSK	Master
88:DC:96:79:17:63	IEEE80211	48	-67 dBm	11ac	WPA2 -PSK	Master
88:DC:96:78:13:0B	EMR3500A	48	-64 dBm	11ac	WPA2 -PSK	Master
A8:6B:AD:F2:A7:B7	WIFIF2A7B3-5G	108	-44 dBm	11ac	WPA2 -PSK	Master
88:DC:96:62:A5:53	EWS550AP	149	-74 dBm	11ac	WPA2 -PSK	Master
88:DC:96:79:28:86	IEEE80211	149	-70 dBm	11ac	WPA2 -PSK	Master
88:DC:96:79:17:54	IEEE80211	108	-48 dBm	11ac	WPA2 -PSK	Master

Repeat scan

Figure 16: AP Scan Results

In the example shown above the best channel to use in this case is channel 165. Next step is to configure that channel on the unit.

Note: Channel 165 is only available for use with a 20 MHz channel.

To select the channel Click the Configuration button.

5GHz	
Operation Mode	WDS Bridge <input type="checkbox"/> Green i
Wireless Mode	802.11 AC/N
Channel HT Mode	20MHz
Channel	Configuration
Transmit Power	11 dBm
Bit Rate i	Configuration
Client Limits	<input checked="" type="radio"/> Enable <input type="radio"/> Disable 127
Multicast to Unicast Stream Conversion	<input checked="" type="radio"/> Enable i <input type="radio"/> Disable i
AP Detection	Scan
Distance (0-30km)	0 (0miles)

Figure 17: Channel Configuration button

Choose the channel you want the unit to operate in. Then Click the Save button at the bottom of the channel list.

5GHz

All	None
U-NII-1	U-NII-2A
U-NII-2B	U-NII-3
Ch 36 : 5.180 GHz	Ch 40 : 5.200 GHz
Ch 44 : 5.220 GHz	Ch 48 : 5.240 GHz
Ch 52 : 5.260 GHz	Ch 56 : 5.280 GHz
Ch 60 : 5.300 GHz	Ch 64 : 5.320 GHz
Ch100 : 5.500 GHz	Ch104 : 5.520 GHz
Ch108 : 5.540 GHz	Ch112 : 5.560 GHz
Ch116 : 5.580 GHz	Ch120 : 5.600 GHz
Ch124 : 5.620 GHz	Ch128 : 5.640 GHz
Ch132 : 5.660 GHz	Ch136 : 5.680 GHz
Ch140 : 5.700 GHz	Ch149 : 5.745 GHz
Ch153 : 5.765 GHz	Ch157 : 5.785 GHz
Ch161 : 5.805 GHz	Ch165 : 5.825 GHz
Save	Save current setting(s)

Figure 18: Selecting operating Channel

After setting the operating channel click save at the bottom of the page and preform the 2 step save process explained on page 4 of this setup guide.

EnGenius® English ▼

ENS500EXT-AC **Outdoor AP, 2T2R, 867Mbps** Changes: 0 **Reset** **Logout**

- Overview
- Device Status
- Connections
- Realtime
- Network
- Basic
- Wireless
- Management
- Advanced
- Time Zone
- WiFi Scheduler
- Tools
- System Manager
- Account
- Firmware
- Log

Wireless Settings

Device Name	HWv1
Country / Region	USA ▼

5GHz

Operation Mode	WDS Bridge ▼	<input type="checkbox"/> Green
Wireless Mode	802.11 AC/N ▼	
Channel HT Mode	20MHz ▼	
Channel	Configuration	
Transmit Power	11 dBm ▼	
Bit Rate	Configuration	
Client Limits	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
	127	
Multicast to Unicast Stream Conversion	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
AP Detection	Scan	
Distance (0-30km)	0	(0miles)

WDS Link Settings - 5GHz

Security	None ▼
AES Passphrase	12345678 (8-63 ASCII characters or 64 hexadecimal digits)

Caution: NAWDS is enabled, please assign the Channel on both frequency bands manually for settings to take effect.

MAC Address	Mode
: : : : :	Enable ▼
: : : : :	Disable ▼
: : : : :	Disable ▼
: : : : :	Disable ▼
: : : : :	Disable ▼
: : : : :	Disable ▼
: : : : :	Disable ▼
: : : : :	Disable ▼
: : : : :	Disable ▼

RSSI Threshold

5GHz

Status	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
RSSI (Range: -100dBm ~ -60dBm)	65 dBm

Caution: Enabling RSSI Threshold disassociates wireless clients that fall below the configured RSSI threshold and may cause wireless clients to reconnect frequently. It is recommended to disable this feature unless you deem it absolutely necessary.

Management VLAN Settings

Status	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	4094
--------	---	------

Caution: If you encounter disconnection issue during the configuration process, verify that the switch and the DHCP server can support the new VLAN ID and then connect to the new IP address.

Save Save Current Setting(s)

Figure 19: Save Button

Setup of HWv2

16 | Page
EnGenius®

The first configuration you want to change in HWv2 is turning off the management radio while configuring the device via Ethernet cable.

Note: The management radio is used in conjunction with the EnWiFi App. The WDS Bridge mode is not an available operation in the EnWiFi APP.

After login into the unit Click Wireless under the Network tab on the left hand side of the screen. Scroll down and disable the Management Interface radio

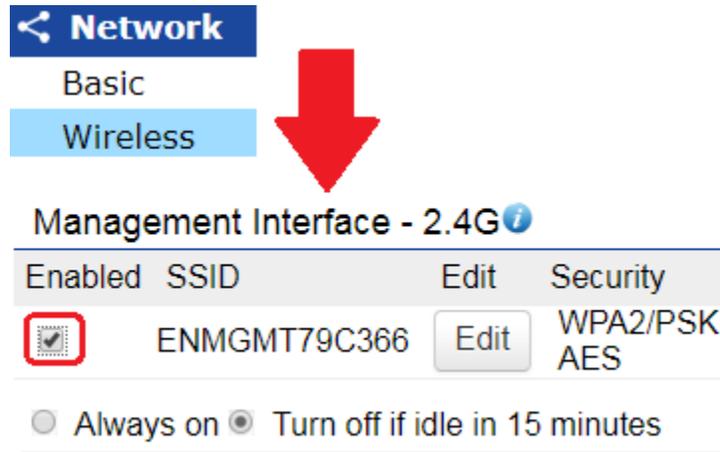


Figure 20: Management Radio enabled

The box should be unchecked.

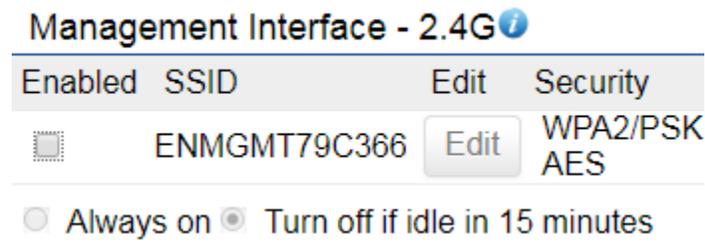


Figure 21: Management Radio Disabled

After unchecking the management interface radio click the save button at the bottom of the Wireless Settings page.

EnGenius® English ▾

ENS500-AC **Single Radio Management AP, 2T2R, 867Mbps** Changes: 5 [Reset](#) [Logout](#)

- Overview**
- Device Status
- Connections
- Realtime
- Network**
- Basic
- Wireless
- Management**
- Advanced
- Time Zone
- WiFi Scheduler
- Tools
- System Manager**
- Account
- Firmware
- Log

Wireless Settings

Device Name: ENS500-AC

Country / Region: USA ▾

EnJet [?](#)

Status: Enable Disable

5GHz (A/N/AC)

Operation Mode: Access Point ▾ Green [?](#)

Channel HT Mode: 40MHz ▾

Channel: [Configuration](#)

Transmit Power: Auto ▾

Bit Rate [?](#): [Configuration](#)

Client Limits: Enable Disable
127

AP Detection: [Scan](#)

Distance (0-30km): 1 (0.6miles)

AP Time Slot [?](#): Auto ▾

Station Priority [?](#): High ▾

Wireless Settings - Access Point

Enabled	SSID	Edit	Security	VLAN ID
<input checked="" type="checkbox"/>	EnGenius79C366	Edit	None	-

Management Interface - 2.4G [?](#)

Enabled	SSID	Edit	Security
<input checked="" type="checkbox"/>	ENMGMT79C366	Edit	WPA2/PSK AES

Always on Turn off if idle in 15 minutes

Management VLAN Settings [?](#)

Status: Enable Disable 4094

Caution: If you encounter disconnection issue during the configuration process, verify that the switch and the DHCP server can support the new VLAN ID and then connect to the new IP address.

[Save](#) Save Current Setting(s)

Figure 22: Save Button

You might get a box warning you to change the management password from default. At this time click the Ignore button, the password will be changed after the device is confirmed to have a WDS Link with the remote unit.

We strongly recommend you to change default password of Management SSID, please reset to login.

New

Confirmed

Figure 23: Management Radio password change warning

A second Box may pop up after pressing the Ignore button. Press Skip on this warning box to proceed to disable the management radio.

We strongly suggest you to change default password of Management SSID, please reset to login.

Figure 24: Second Warning Box

The next step is to change the mode of operation to WDS Bridge mode. This is done by first disabling EnJet. Once EnJet is disabled the option of WDS Bridge will appear in the drop down menu of operating modes.

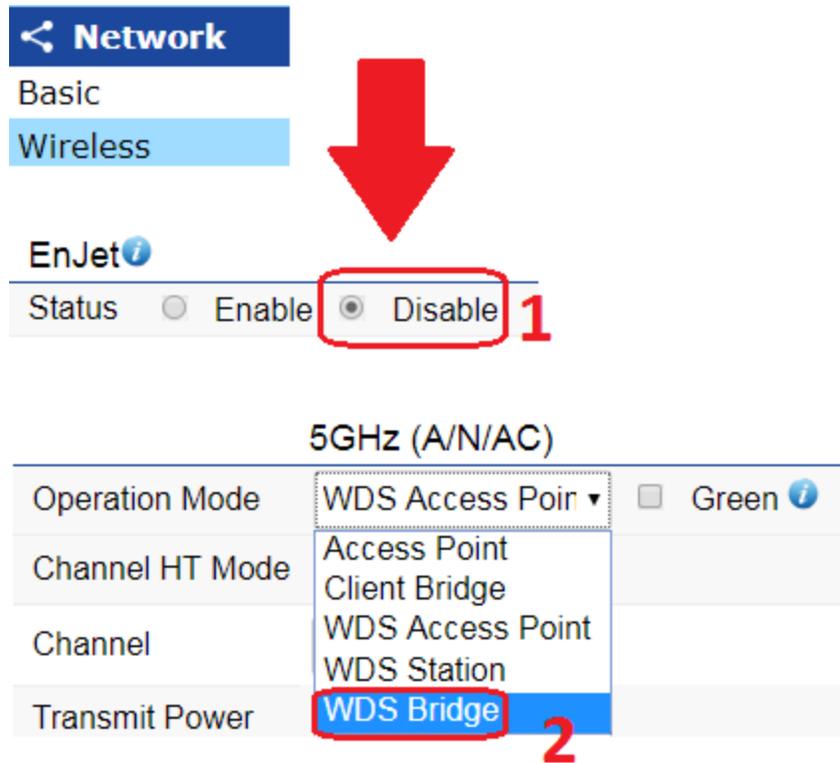


Figure 25: Setting WDS Bridge Mode

Don't forget to disable Green mode as well.

After changing the mode of operation to WDS Bridge mode and disabling Green mode, then click the Save button at the bottom of the Wireless Settings page. The unit should reboot.

EnGenius® English ▾

ENS500-AC **Single Radio Management AP, 2T2R, 867Mbps** Changes: 0 [Reset](#) [Logout](#)

- Overview**
- Device Status
- Connections
- Realtime
- Network**
- Basic
- Wireless
- Management
- Advanced
- Time Zone
- WiFi Scheduler
- Tools
- System Manager**
- Account
- Firmware
- Log

Wireless Settings

Device Name: ENS500-AC

Country / Region: USA ▾

EnJet

Status: Enable Disable

5GHz (A/N/AC)

Operation Mode: WDS Access Poi ▾ Green

Channel HT Mode: 20MHz ▾

Channel: [Configuration](#)

Transmit Power: 8 dBm ▾

Bit Rate: [Configuration](#)

Client Limits: Enable Disable
127

AP Detection: [Scan](#)

Distance (0-30km): 0 (0miles)

AP Time Slot: Auto ▾

Station Priority: High ▾

Wireless Settings - Access Point

Enabled	SSID	Edit	Security	VLAN ID
<input checked="" type="checkbox"/>	Root-AP	Edit	None	-

Management Interface - 2.4G

Enabled	SSID	Edit	Security
<input type="checkbox"/>	ENMGMT79C366	Edit	WPA2/PSK AES

Always on Turn off if idle in 15 minutes

Management VLAN Settings

Status: Enable Disable 4094

Caution: If you encounter disconnection issue during the configuration process, verify that the switch and the DHCP server can support the new VLAN ID and then connect to the new IP address.

Save Save Current Setting(s)

Figure 26: Save button at bottom of Wireless Settings Page

The 5GHz BSSID of HWv2 should be noted. This 5GHZ BSSID should be configured in the remote unit.

i Overview

Device Status

Connections

Realtime



Device Information

Device Name	ENS500-AC
Serial Number	190000000
MAC Address	
- LAN	88:DC:96:00:00:C4
- Wireless LAN - 5GHz	88:DC:96:00:00:00
Country	USA
Current Local Time	Fri May 3 11:24:08 2019
Uptime	23h 5m 8s
Firmware Version	v3.5.5_c1.9.20
Hardware Version	2.0
Management VLAN ID	Untagged
Registration Check Code	ffffffff

Figure 27: HWv2 5GHz BSSID

The 5GHZ BSSID of the remote unit should be configured into the HWv2 unit. If using encryption enable that option as well as enter the AES Passphrase that matches the HWv1 AES Passphrase.

← Network

Basic

Wireless

WDS Link Settings - 5GHz

Security: AES

AES Passphrase: *****
(8-63 ASCII characters or 64 hexadecimal digits)

Caution: NAWDS is enabled. please assign the Channel on both frequency bands manually for settings to take effect.

MAC Address	Mode
88 : DC : 96 : 11 : 11 : 11	Enable
: : : : : :	Disable
: : : : : :	Disable
: : : : : :	Disable
: : : : : :	Disable
: : : : : :	Disable
: : : : : :	Disable
: : : : : :	Disable

Figure 28: Entering HWv1 5GHz BSSID

After configuring the 5GHz BSSID and the passphrase, then click the Save button at the bottom of the Wireless Settings page. After clicking the Save button at the bottom of the page click either Changes in the upper right hand corner or Apply in the lower right hand corner of the screen. Please refer back to figure 5 on page 4.

Below are best practices for HWv2 in WDS Bridge mode.

[← Network](#)
 Basic
 Wireless



5GHz (A/N/AC)

Operation Mode	WDS Bridge ▼	<input type="checkbox"/> Green ⓘ
Channel HT Mode	20MHz	
Channel	Configuration	
Transmit Power	11 dBm ▼	
Bit Rate ⓘ	Configuration	
Client Limits	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
	127	
AP Detection	Scan	
Distance (0-30km)	0	(0miles)
AP Time Slot ⓘ	Auto ▼	
Station Priority ⓘ	High ▼	

Figure 29: HWv2 WDS Bridge Best Practices

Note: HWv2 is capable of 8 dBm as the lowest Tx output setting. When configuring HWv2 to operate with any EnGenius non EnJet capable devices it is recommend that the Tx power be set to 11 dBm, which is the lowest Tx output power that non Enjet products can be configured for.

Configure the channel in the same fashion as shown in HWv1.

Note: A scan of the wireless environment is not shown as the channel was already set. Please see pages 12-13 for more information on channel scan.

5GHz (A/N/AC)	
Operation Mode	WDS Bridge <input type="checkbox"/> Green
Channel HT Mode	20MHz
Channel	Configuration
Transmit Power	11 dBm
Bit Rate	Configuration
Client Limits	<input checked="" type="radio"/> Enable <input type="radio"/> Disable 127
AP Detection	Scan
Distance (0-30km)	0 (0miles)
AP Time Slot	Auto
Station Priority	High

Figure 30: Channel Config

5GHz

All	None
U-NII-1	U-NII-2A
U-NII-2B	U-NII-3
Ch 36 : 5.180 GHz	Ch 40 : 5.200 GHz
Ch 44 : 5.220 GHz	Ch 48 : 5.240 GHz
Ch 52 : 5.260 GHz	Ch 56 : 5.280 GHz
Ch 60 : 5.300 GHz	Ch 64 : 5.320 GHz
Ch100 : 5.500 GHz	Ch104 : 5.520 GHz
Ch108 : 5.540 GHz	Ch112 : 5.560 GHz
Ch116 : 5.580 GHz	Ch120 : 5.600 GHz
Ch124 : 5.620 GHz	Ch128 : 5.640 GHz
Ch132 : 5.660 GHz	Ch136 : 5.680 GHz
Ch140 : 5.700 GHz	Ch149 : 5.745 GHz
Ch153 : 5.765 GHz	Ch157 : 5.785 GHz
Ch161 : 5.805 GHz	Ch165 : 5.825 GHz

Save Save current setting(s)

Figure 31: setting Operational Channel

Press save at the bottom of the Wireless Settings page. Please refer to page 4-5 for complete instructions on this step.

The screenshot shows the EnGenius web interface for an ENS500EXT-AC Outdoor AP. The page is titled "Wireless Settings" and includes a sidebar with navigation options like Overview, Network, Management, and System Manager. The main content area is divided into several sections: "Wireless Settings" (with fields for Device Name, Country/Region, and 5GHz settings like Operation Mode, Wireless Mode, Channel HT Mode, Channel, Transmit Power, Bit Rate, Client Limits, Multicast to Unicast Stream Conversion, AP Detection, and Distance), "WDS Link Settings - 5GHz" (with Security, AES Passphrase, and a table of MAC addresses and modes), "RSSI Threshold" (with Status, RSSI value, and a caution note), and "Management VLAN Settings" (with Status and VLAN ID). At the bottom, a red arrow points to a "Save" button labeled "Save Current Setting(s)".

Figure 32: Save button

Once the WDS Link is established you can check on the signal strength if the link to determine if the units TX power needs to be adjusted or the antennas need to be aligned better. Below is where to find the RSSI of the WDS link in HWv1.



Overview

Device Status

Connections

WDS Link List - 5GHz

WDS Link ID#	MAC Address	Link Status	RSSI(dBm)
#1	88:dc:96:00:00:00	UP	-59

Refresh

Figure 33: HWv1 RSSI

Below is the same information, but this is the RSSI on HWv2.

WDS Link List - 5GHz

WDS Link ID#	MAC Address	Link Status	RSSI(dBm)
#1	88:dc:96:11:11:11	UP	-53

Refresh

Figure 34: HWv2 RSSI

The RSSI value you should be aiming for is between -65dBm to -40 dBm. Any signal worse than -65 dBm, and you will not get steady high data rates. If you get too much signal (-35 dBm) then that will start to self-interfere and it will degrade the signal. For any deployments less than 50 feet we recommend starting both units at the lowest transmit power settings and if need be move up from there. If you are still getting too strong of a signal at very close ranges then purposely misaligning the radios by connecting to the side lobes may be necessary.