

DWC-1000 /2000 optimized 5GHz & 2.4GHz Wireless Settings

[requirements]

1. Unified Wireless Controller/Switch with latest firmware fersion: 4.6.x/4.7.x and newer
(this settings are also valid for DWS-4026 (FW 4.3.x and newer) & DWS-3160 (FW 4.4.x and newer), the webgui menu structure will differ from the ons of the DWC-1000/2000)

2. compatible AP with latest firmware

ftp://ftp.dlink.de/dwc/dwc-1000/driver_software/

ftp://ftp.dlink.de/dwc/dwc-2000/driver_software/

ftp://ftp.dlink.de/dws/dws-3160-24pc/driver_software/

ftp://ftp.dlink.de/dws/dws-3160-24tc/driver_software/

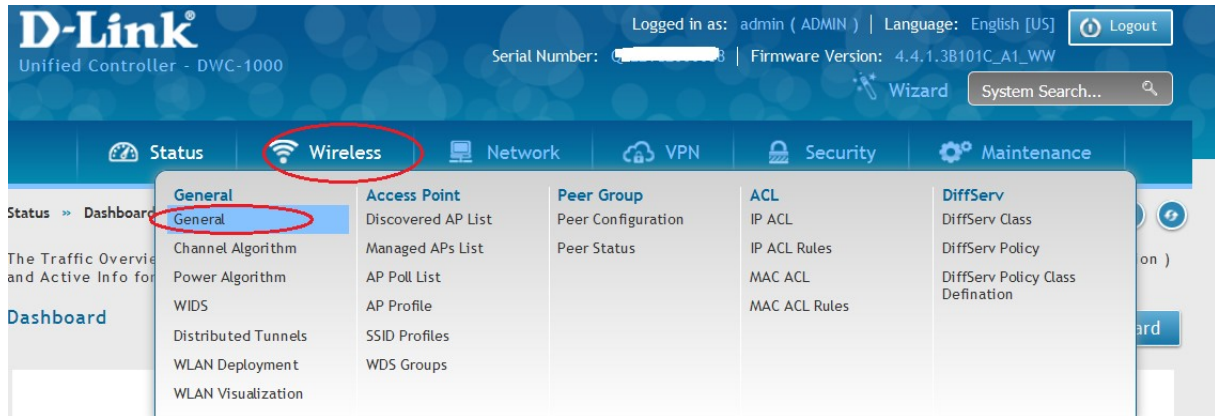
ftp://ftp.dlink.de/dws/dws-4026/driver_software/

[setup]

Open the WebGUI of the DWC-1000/2000 and login

1.)

Navigate to the Submenu > wireless > general



Modify the values according to your setup:

- | | |
|---------------------------------|--|
| Peer Address Group | = defines the peer group in which you can peer several DWC's |
| Client Roam Timeout | = 30 |
| Ad Hoc Client Status Timeout | = 1 |
| AP Failure Status Timeout | = 1 |
| RF Scan Status Timeout | = 1 |
| Detected Clients Status Timeout | = 1 |
| Cluster Priority | = defines the priority of the local device within the peer/cluster group, the device with the highest priority (255) will become the peer-master |
| Country Code | = defines the wireless country code for your country/region |

WLAN Global Setup

WLAN Controller Operational Status

ON OFF

IP Address

192.168.10.1

Peer Group ID

[Default: 1, Range: 1 - 255]

Client Roam Timeout

[Range: 1 - 120] Seconds

Ad Hoc Client Status Timeout

[Range: 0 - 168] Hours

AP Failure Status Timeout

[Range: 0 - 168] Hours

Client MAC Authentication Mode

White-list Black-list

RF Scan Status Timeout

[Range: 0 - 168] Hours

Detected Clients Status Timeout

[Range: 0 - 168] Hours

Tunnel IP MTU Size

1500 1520

Cluster Priority

[Range: 0 - 255]

AP Client QoS

ON OFF

Radius Authentication Server

Radius Authentication Server Status

Configured

Radius Accounting Server

Radius Accounting Server Status

Configured

Global Accounting Mode

ON OFF

AP Validation

AP MAC Validation

Local Radius

Require Authentication Passphrase

ON OFF

Manage AP with Previous Release Code

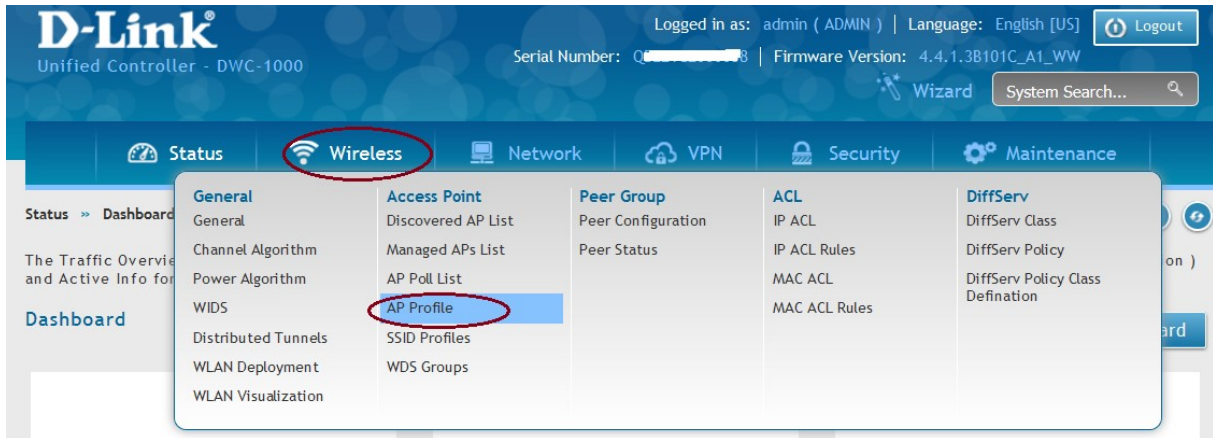
ON OFF

Country Configuration

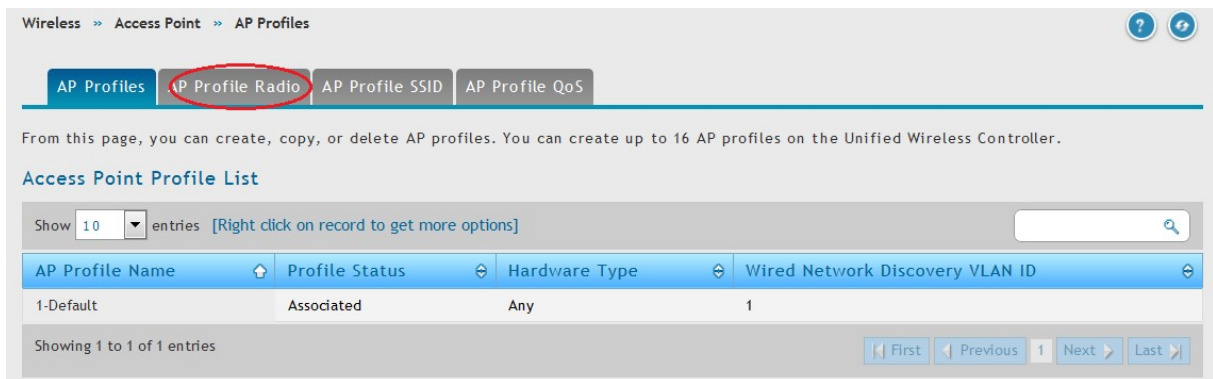
Country Code

2.)

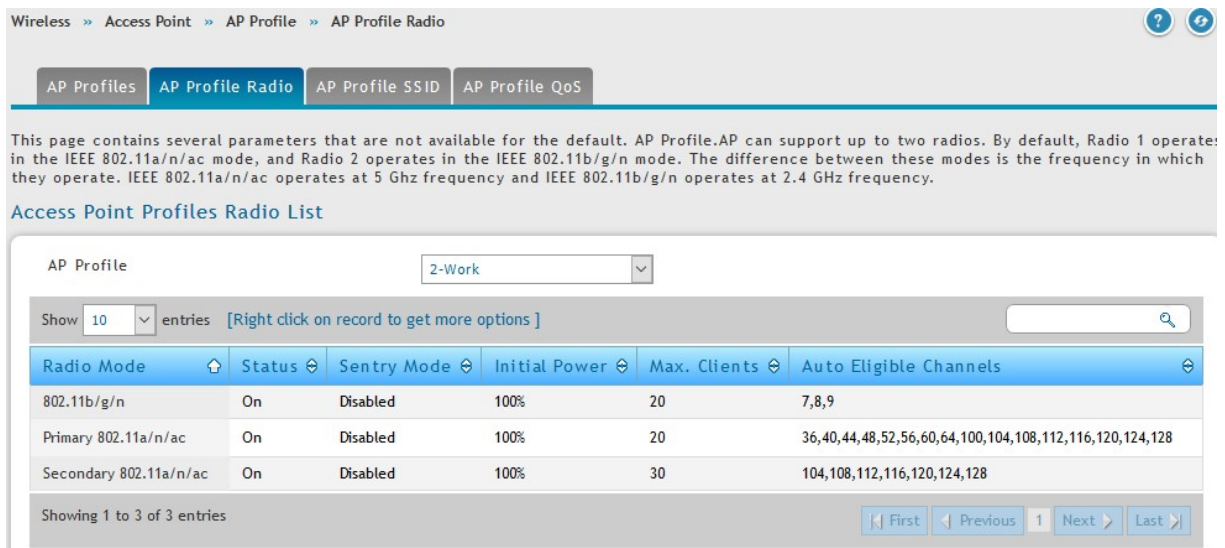
Navigate to the Submenu > Wireless > AP Profile



Open the Menu > AP Profile Radio,



If you did create several AP-Profiles so you now can chose and edit the radio frequency for each AP-Profile using the right mouse button => edit



5 GHz Band/Radio

AP Profile Radio Configuration X

AP Profile: 2-Work

Radio Mode: 1-Primary 802.11a/n/ac

Radio Configuration

State: ON OFF

Radio Scheduler: Scheduler Off

RTS Threshold: 2347 [Range: 0 - 2347] Bytes

Load Balancing: ON OFF

Maximum Clients: 20 [Range: 0 - 200]

RF Scan Other Channels: ON OFF

RF Scan Sentry: ON OFF

Mode: IEEE 802.11a/n/ac

DTIM Period: 10 [Range: 1 - 255] Beacons

AP Profile Radio Configuration X

DTIM Period: 10 [Range: 1 - 255] Beacons

Beacon Interval: 75 [Range: 20 - 200] M. Sec.

Automatic Channel: ON OFF

Automatic Power: ON OFF

Initial Power: 100 [Range: 1% - 100%]

Minimum Power: 100 [Range: 1% - 100%]

APSD Mode: ON OFF

RF Scan Interval: 60 [Range: 30 - 120] Seconds

Frag Threshold: 2346 [Range: 256 - 2346] Bytes

Short Retries: 7

RF Scan Duration: 10 [Range: 10 - 2000] M. Sec.

Long Retries: 4

AP Profile Radio Configuration X

Long Retries: 4

Rate Limiting: ON OFF

Transmit Life time: 512

Rate Limit: 30 [Range: 1 - 50] Pkts/Sec

Receive Lifetime: 512

Rate Limit Burst: 40 [Range: 1 - 75] Pkts/Sec

Station Isolation: ON OFF

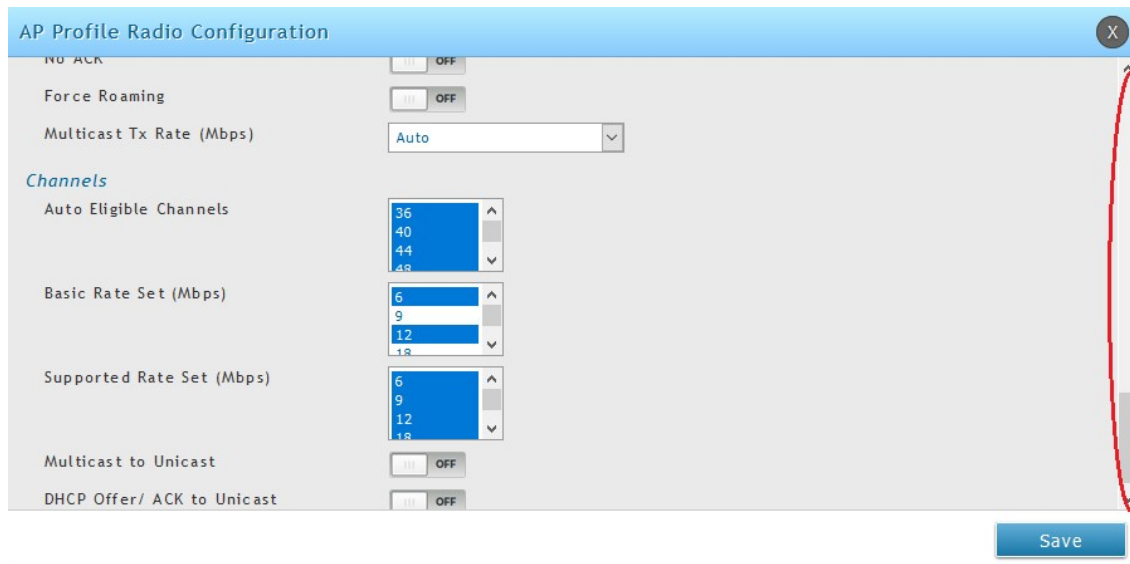
Channel Bandwidth: 20 MHz 40 MHz 80 MHz

Primary Channel: Lower

Protection: Auto Off

Short Guard Interval: ON OFF

Space Time Block Code: ON OFF



RTS Threshold = 2347
 Maximum Clients = 20 (this limit is for each radio on each AP)
[a concurrent dualband AP like DWL-8610AP has 2 radios, so the maximum in 5GHz is 20 Clients and if set the same value in 2.4 GHz, then it is 20 Clients there too. Total Client maximum is then for this example AP 40 Clients]

RF Scan Other Channels = Disable
 Mode = defines the WLAN mode f.e. 802.11 a/n/ac
[if set to latest IEEE Wireless mode all managed APs always will act to the maximum of their hardware capabilities, so by defining the latest IEEE802.11 a/n/ac in 5 GHz radio also support normal 5GHz IEEE802.11a/n APs like DWL-6600]

Beacon Interval = 75ms
 Automatic Channel = ON
 Automatic Power = ON
 Initial Power = transmit power of the AP after reboot (f.e. 80%)
 Minimum Power = the minimum transmit power of the AP which can't be lower than the defined minimum (f.e. 60%)

[if you use Auto Power please check your AP-placement and modify this values for your dedicated setup]

APSD Mode = Enable
 Frag Threshold = 2346
 Rate Limiting = ON
 Rate Limit = 30
 Rate Limit Burst = 40
 Station Isolation = ON

[if you use station isolation please be noted, that this is working for all SSID's inside the AP-Profile but only within the same radio, it is not working in between both radios]

Channel Bandwidth = 20, 40, 80 MHz

[defines the useable channel bandwidth, wider channel will provide higher throughput, but lesser channel to select, 80MHz channel is mandatory for IEEE802.11ac]

Space Time Block Code (STBC) = ON

[disabling this option will result in a slightly higher data throughput, also some old clients might be able to connect to the wireless]

Disabling the STBC option also means that the AP will not send the data to the client with a time difference and from different antennas to ensure data integrity.]

Force Roaming = ON/OFF

[the APs will try to support the client initiated roaming behavior by checking the signal and SNR of the client, if the AP decides that the client should roam, the AP will send an disassociate packet to the client]

IF you use this option you must make sure, that the wireless coverage is overlapping and please be advised, that the clients might be disconnected at the corner of the wireless are.

We advise you to be careful with this special option.]

Channels = the available channels for auto channel selection

Basic Rate Set / Supported Rate Set = The Basic Rate set is the rate that all clients that want to associate with a AP must support. For backward compatibility with 802.11a clients, the Basic Rate set is generally 6, 12 and 24Mbps. This information is transmitted by the AP as mandatory rates in the Supported Rates element of various management frames.

With the save button you save your settings.

2,4 GHz Band/Radio

AP Profile Radio Configuration X

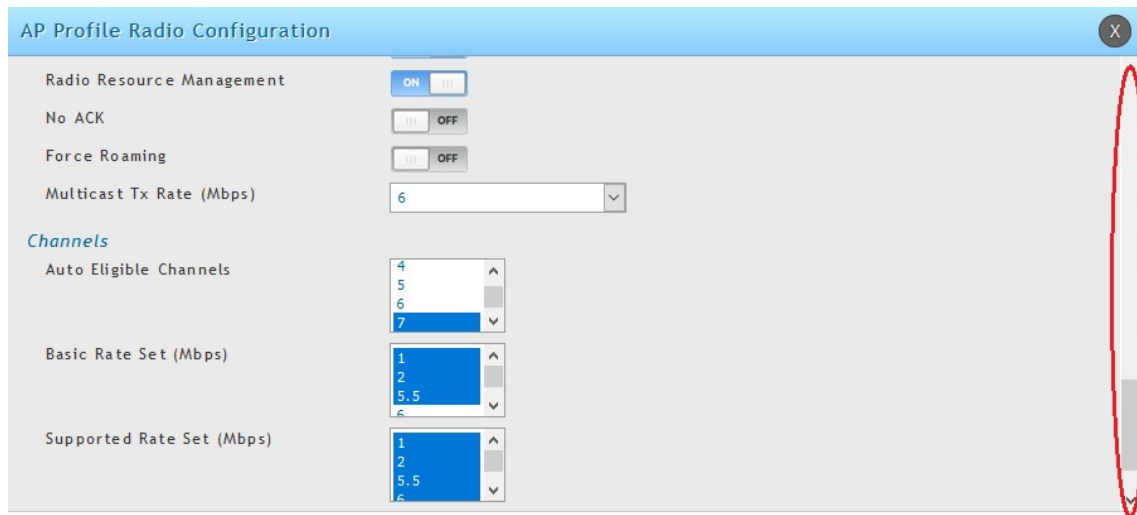
AP Profile	2-Work	
Radio Mode	2-802.11b/g/n	
<i>Radio Configuration</i>		
State	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	
Radio Scheduler	Scheduler Off	
RTS Threshold	<input type="text" value="2347"/>	[Range: 0 - 2347] Bytes
Load Balancing	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	
Maximum Clients	<input type="text" value="20"/>	[Range: 0 - 200]
RF Scan Other Channels	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	
RF Scan Sentry	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	
Mode	IEEE 802.11b/g/n	
DTIM Period	<input type="text" value="10"/>	[Range: 1 - 255] Beacons

AP Profile Radio Configuration X

DTIM Period	<input type="text" value="10"/>	[Range: 1 - 255] Beacons
Beacon Interval	<input type="text" value="75"/>	[Range: 20 - 200] M. Sec.
Automatic Channel	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	
Automatic Power	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	
Initial Power	<input type="text" value="100"/>	[Range: 1% - 100%]
Minimum Power	<input type="text" value="100"/>	[Range: 1% - 100%]
APSD Mode	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	
RF Scan Interval	<input type="text" value="60"/>	[Range: 30 - 120] Seconds
Frag Threshold	<input type="text" value="2346"/>	[Range: 256 - 2346] Bytes
Short Retries	7	
RF Scan Duration	<input type="text" value="10"/>	[Range: 10 - 2000] M. Sec.
Long Retries	4	

AP Profile Radio Configuration X

Long Retries	4	
Rate Limiting	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	
Transmit Lifetime	512	
Rate Limit	<input type="text" value="30"/>	[Range: 1 - 50] Pkts/Sec
Receive Lifetime	512	
Rate Limit Burst	<input type="text" value="40"/>	[Range: 1 - 75] Pkts/Sec
Station Isolation	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	
Channel Bandwidth	<input type="radio"/> 20 MHz <input checked="" type="radio"/> 40 MHz	
Primary Channel	<input type="radio"/> Upper <input checked="" type="radio"/> Lower	
Protection	<input checked="" type="radio"/> Auto <input type="radio"/> Off	
Short Guard Interval	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	
Space Time Block Code	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	



RTS Threshold = 2347
 Maximum Clients = 20 (this limit is for each radio on each AP)
[a concurrent dualband AP like DWL-8610AP has 2 radios, so the maximum in 5GHz is 20 Clients and if set the same value in 2.4 GHz, then it is 20 Clients there too. Total Client maximum is then for this example AP 40 Clients]

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 Automatic Channel = ON
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 Initial Power = transmit power of the AP after reboot (f.e. 80%)
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[if you use Auto Power please check your AP-placement and modify this values for your dedicated setup]

APSD Mode = Enable
 Frag Threshold = 2346
 Rate Limiting = ON
 Rate Limit = 30
 Rate Limit Burst = 40
 Station Isolation = ON
[if you use station isolation please be noted, that this is working for all SSID's inside the AP-Profile but only within the same radio, it is not working in between both radios]

Channel Bandwidth = 20, 40 MHz
[defines the useable channel bandwith, wider channel will provide higher troughput, but lesser channel to select]

Space Time Block Code (STBC) = ON

*[disabling this option will result in a slightly higher data throughput, also some old clients might be able to connect to the wireless
Disabling the STBC option also means that the AP will not send the data to the client with a time difference and from different antennas to ensure data integrity.]*

Force Roaming = ON/OFF

[the APs will try to support the client initiated roaming behavior by checking the signal and SNR of the client, if the AP decides that the client should roam, the AP will send an disassociate packet to the client

IF you use this option you must make sure, that the wireless coverage is overlapping and please be advised, that the clients might be disconnected at the corner of the wireless are.

We advise you to be careful with this special option.]

Channels = the available channels for auto channel selection

Basic Rate Set / Supported Rate Set = The Basic Rate set is the rate that all clients that want to associate with a AP must support. For backward compatibility with 802.11b clients, the Basic Rate set is generally 1, 2, 5.5 and 11Mbps. This information is transmitted by the AP as mandatory rates in the Supported Rates element of various management frames.

With the save button you save your settings.

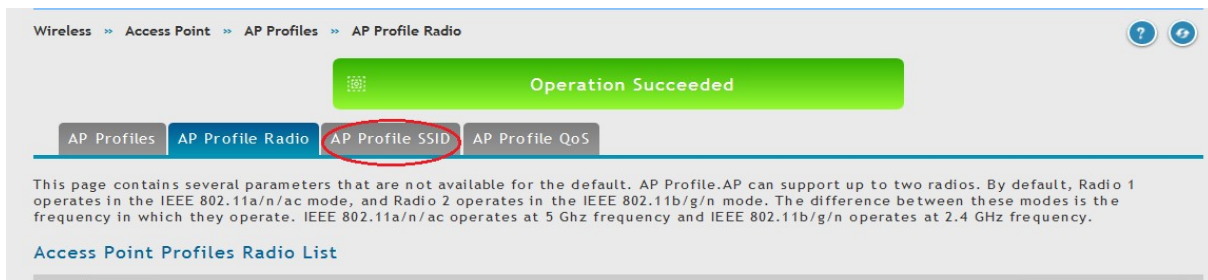
Modifying the Basic/Supported Rate Set will also influence the roaming behavior of your wireless clients.

If you f.e. disable all Basic/Supported Rate Set 1, 2, 5.5 and 6 the Client will usually roam earlier but also the clients at the verge of the wireless network might have issues connecting to the wireless network.

If you have a triple band AP like DWL-7620AP, please modify the secondary 5 GHz Radio too.

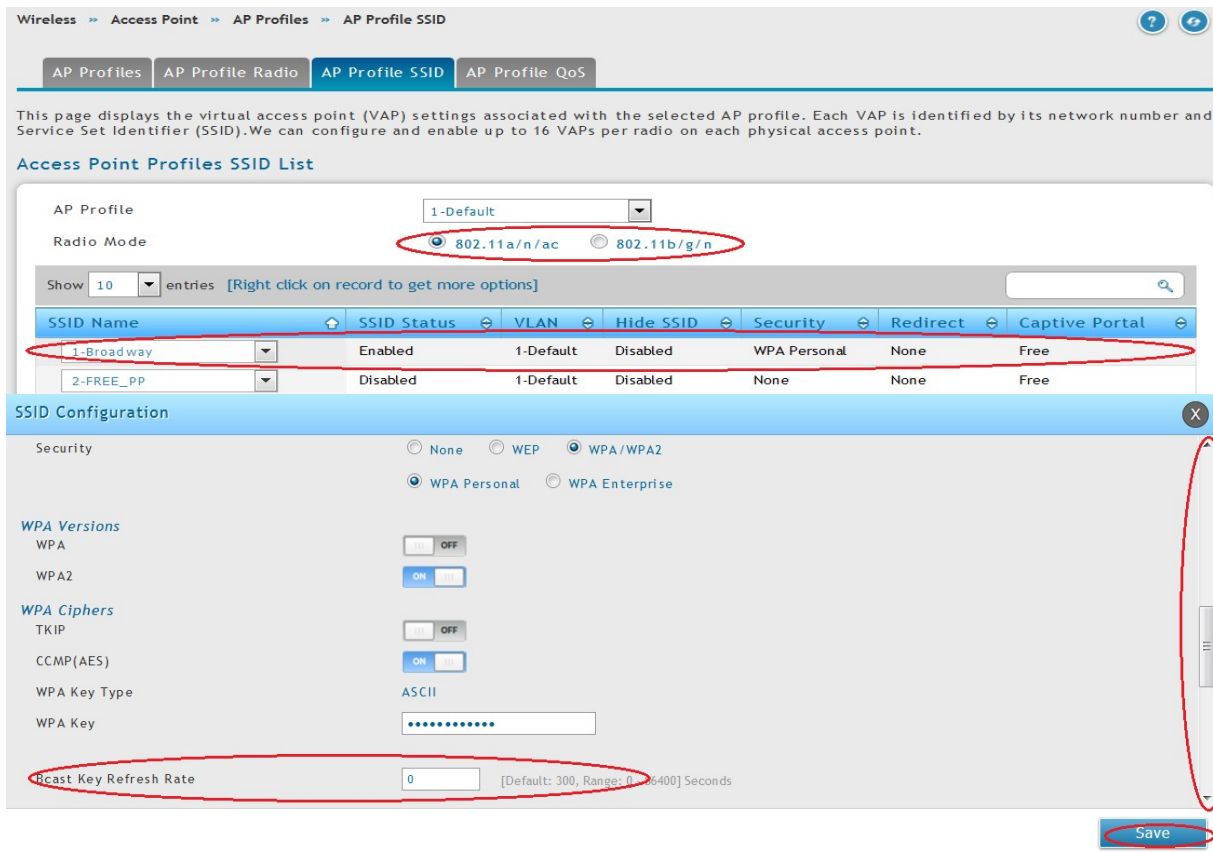
3.) optimization when using WPA2-AES encryption.

Navigate to the Submenu > Wireless Access Point > AP Profiles > AP Profiles SSIDs



Choose the SSID you want to modify by clicking right mouse and selecting edit.

(the SSID settings are a global variable, no matter in which AP Profile the SSID is being transmitted)



WPA2 = enable
WPA AES = enable
Bcast Key Refresh Rate = 0

Please only activate WPA2 & CCMP (AES) since this is compliant with current IEEE standard.

With the save button you save your settings.

Navigate to the Submenu > Wireless Access Point > AP Profiles

The screenshot shows the 'AP Profiles' configuration page with the 'AP Profile SSID' sub-tab selected. The 'AP Profile' dropdown is set to '1-Default' and the 'Radio Mode' is set to '802.11a/n/ac'. Below these settings is a table titled 'Access Point Profiles SSID List' with columns for SSID Name, SSID Status, VLAN, Hide SSID, Security, Redirect, and Captive Portal. A search bar and a 'Show 10 entries' dropdown are also visible.

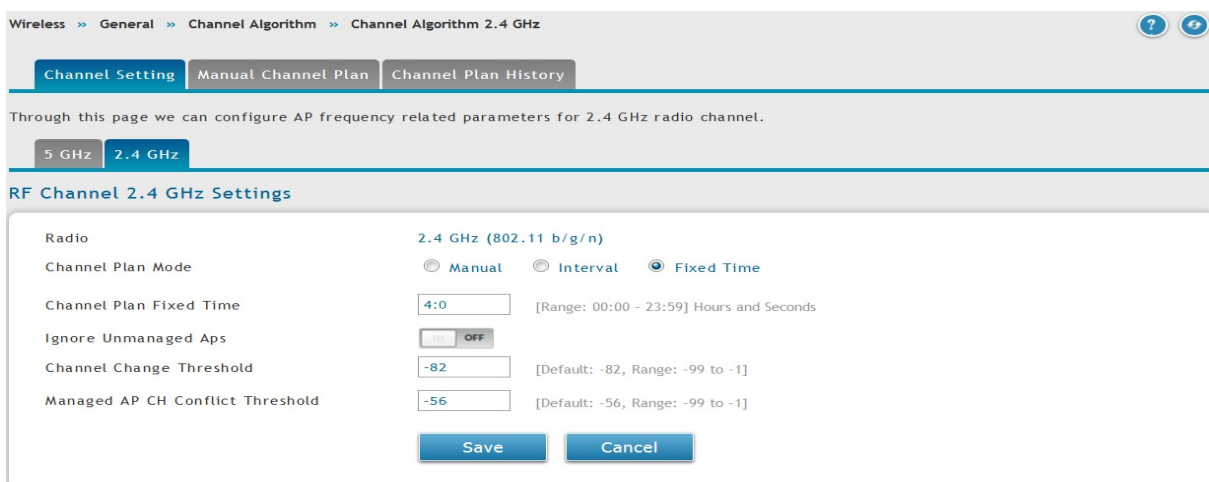
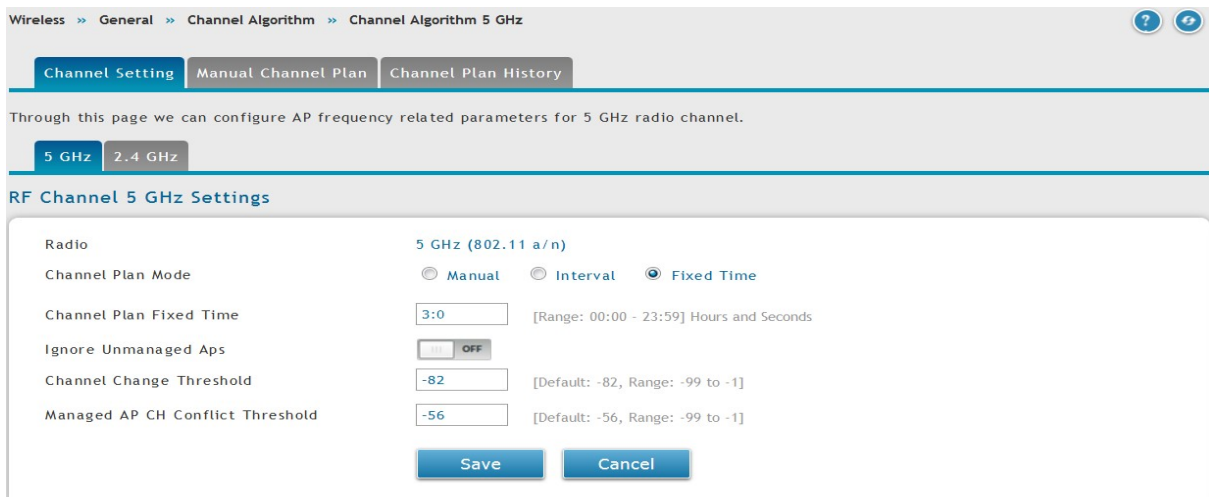
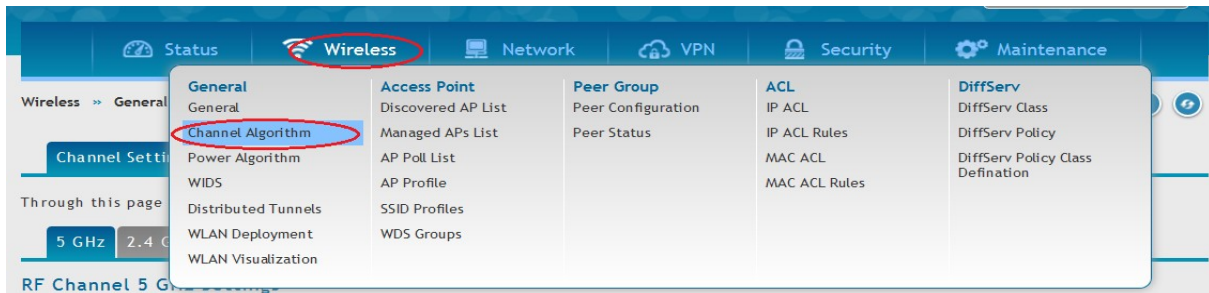
The screenshot shows the 'AP Profiles' configuration page with the 'AP Profile List' sub-tab selected. The table lists the profile '1-Default' with a status of 'Associated - Modified', hardware type 'Any', and a wired network discovery VLAN ID of '1'. A red circle highlights the '1-Default' entry in the table. Navigation buttons for 'First', 'Previous', 'Next', and 'Last' are visible at the bottom of the table.

AP Profile Name	Profile Status	Hardware Type	Wired Network Discovery VLAN ID
1-Default	Associated - Modified	Any	1

With the right mouse click and then Apply you will transmit your modification to all associated/managed APs of this dedicated AP Profile.

When using Auto-Power and Auto-Channel selection in AP Profile please ensure that you also configure the options in RF-management.

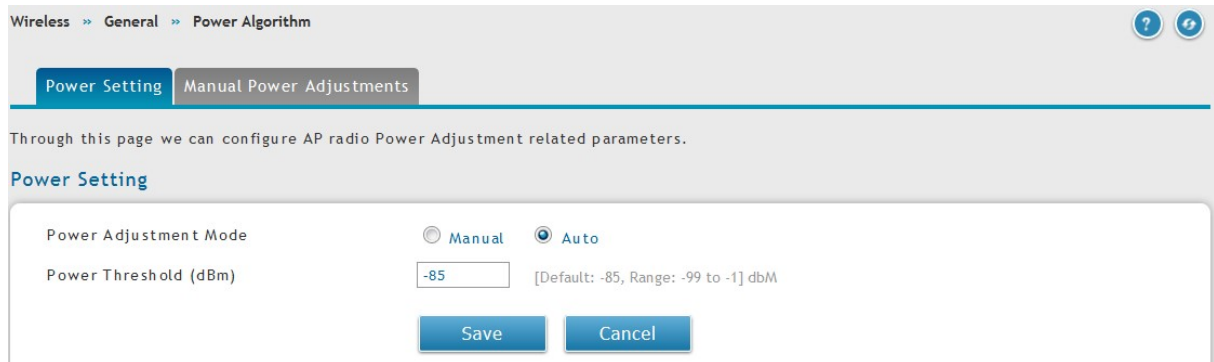
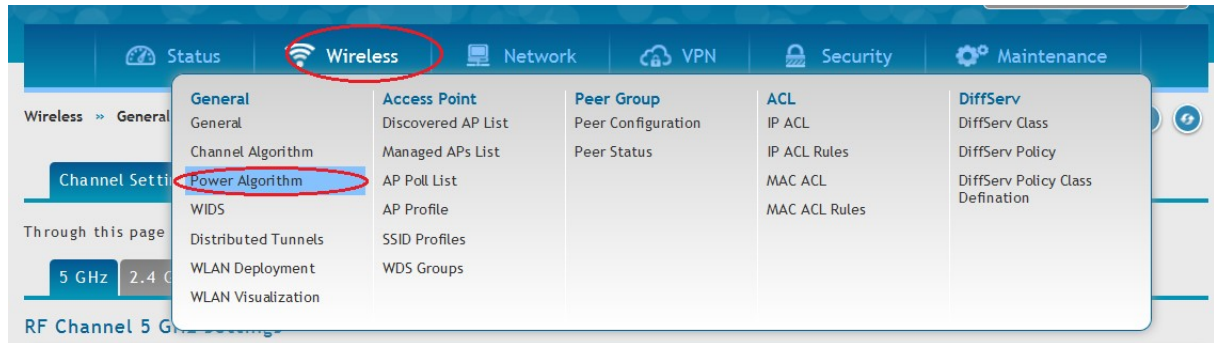
Wireless > Channel Algorithm



Channel Plan
Channel Plan Mode

= select 5 GHz and later on 2.4 GHz radio
= we recommend to use a fixed time (f.e. 2:00 am) as a channel plan, also please use different times for the plan for each radio

Wireless > Power Algorithm



Power Adjustment Mode = Auto

Please be advised that this settings and values are only suggestions which we generally recommend. The exact and detailed values and settings in your unique setup should be defined specifically for your environment and clients.