802.11n Setup Guide

From MikroTik Wiki

Contents

Brief Overview

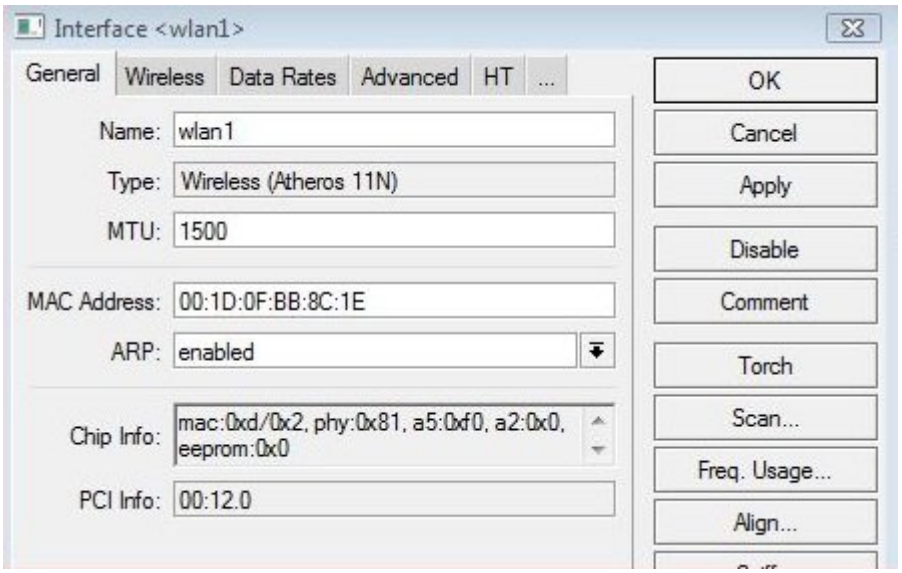
Since the release of Mikrotik v4.03beta, 802.11n draft wireless cards are now supported. This guide's purpose is to explain to those familiar with the use of regular wireless, exactly how to go about setting up an 802.11n card.

Pre-Setup

Equipment

Equipment used on my test bench:

- RB411A x 2
- TP-Link Wireless N MiniPCI Adapter, Atheros, 2T2R, 2.4GHz, 802.11n Draft 2.0, 802.11g/b x 2

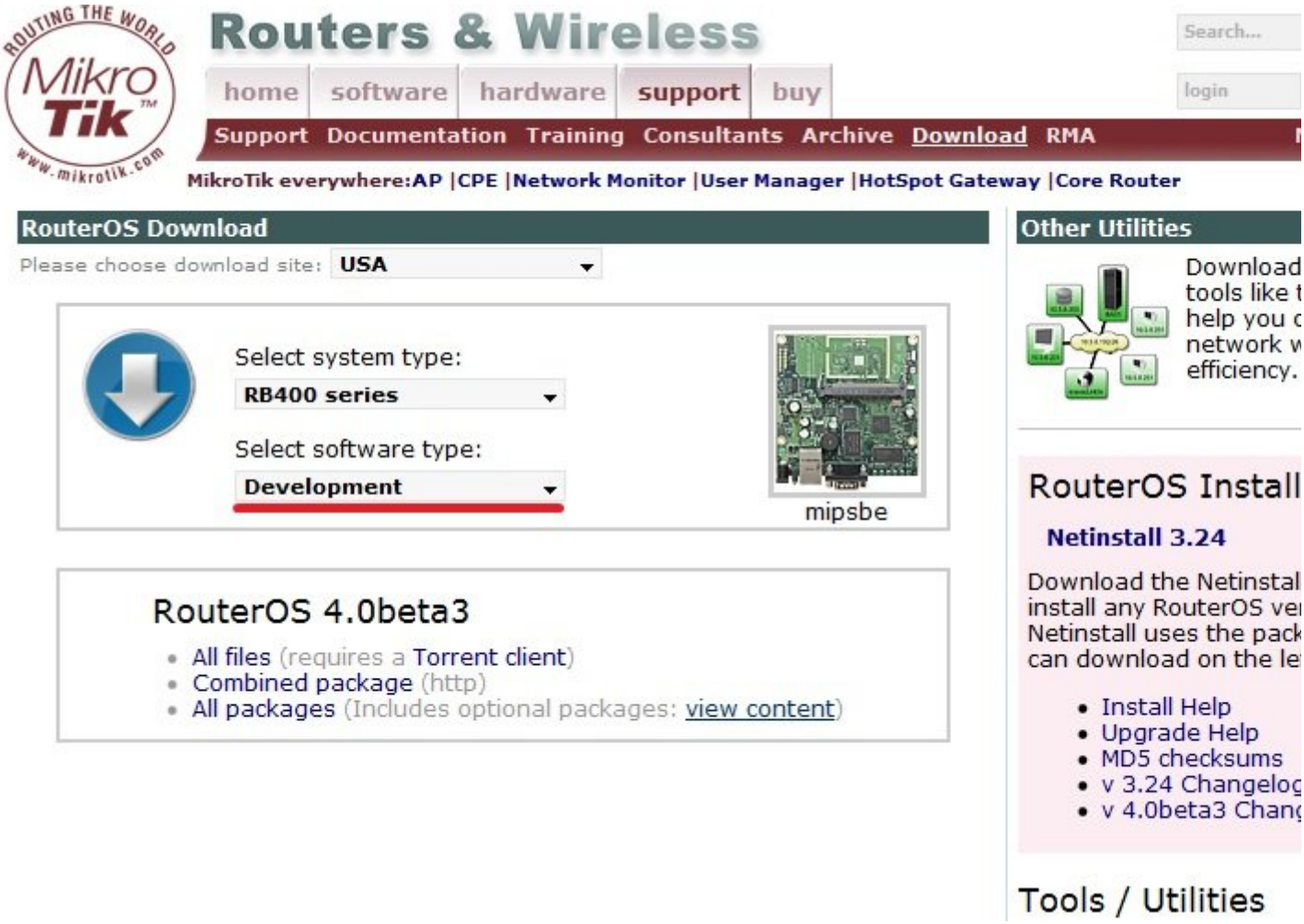


Note: I will be doing further testing with the Mikrotik 802.11n cards and adding info when they arrive but at the time of release I already had these cards spare.

Upgrading to v4.03beta

Steps to upgrading your Routerboard or x86 device are located here - Upgrading_RouterOS

The only difference to a normal install is that firstly, you will be installing a developement release of Mikrotik software.

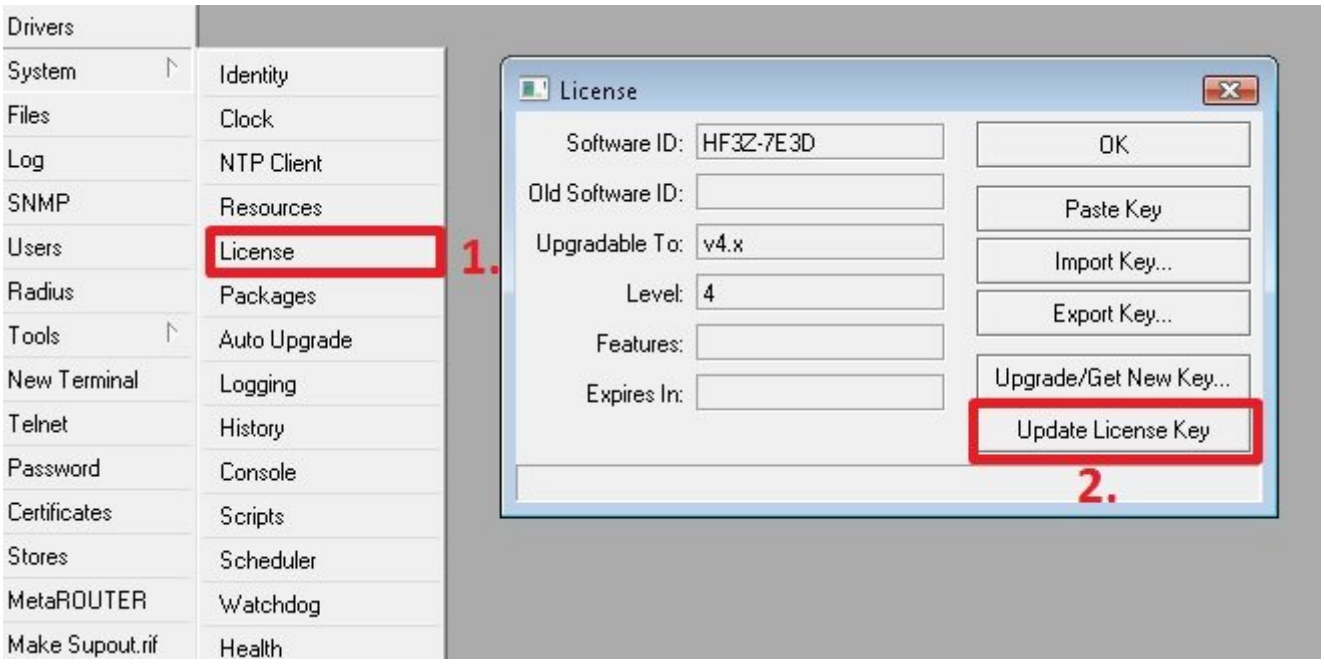


As you can see in this image I have selected the RB400 series to match my boards.

Updating Licence key and unlocking 802.11n

Once you have completed the upgrade to v4.03beta, connect via winbox to your device then:

1. Open the licence page via System -> Licence
2. Click on the "update licence key"



Setup and Testing

This section details how to configure your wireless 802.11n card along with an example at the end of a preconfigured setup you can attempt on your own cards. I will also go into as much detail as possible on the new options provided to the 802.11n cards and what each of these does.

802.11n Configuration options

Winbox changable configuration options

- **band** (2ghz-b/g/n | 2ghz-onlyn | 5ghz-a/n | 5ghz-onlyn | other-original a/b/g options also available)
- **ht-extension-channel** (above-control | below-control | disabled)
- **ht-rxchains** (0,1,2 - any combination of these)
- **ht-txchains** (0,1,2 - any combination of these)
- **ht-ampdu-priorities** (0,1,2,3,4,5,6,7 - any combination of these)
- **ht-guard-interval** (any | long)

These items can be viewed and changed from in winbox or terminal.

Winbox viewable configuration options

- **ht-basic-mcs** (mcs-0,mcs-1,mcs-2,mcs-3,mcs-4,mcs-5,mcs-6,mcs-7,mcs-8,mcs-9,mcs-10,mcs-11,mcs-12,mcs-13,mcs-14,mcs-15 - any combination of these)
- **ht-supported-mcs** (mcs-0,mcs-1,mcs-2,mcs-3,mcs-4,mcs-5,mcs-6,mcs-7,mcs-8,mcs-9,mcs-10,mcs-11,mcs-12,mcs-13,mcs-14,mcs-15 - any combination of these)

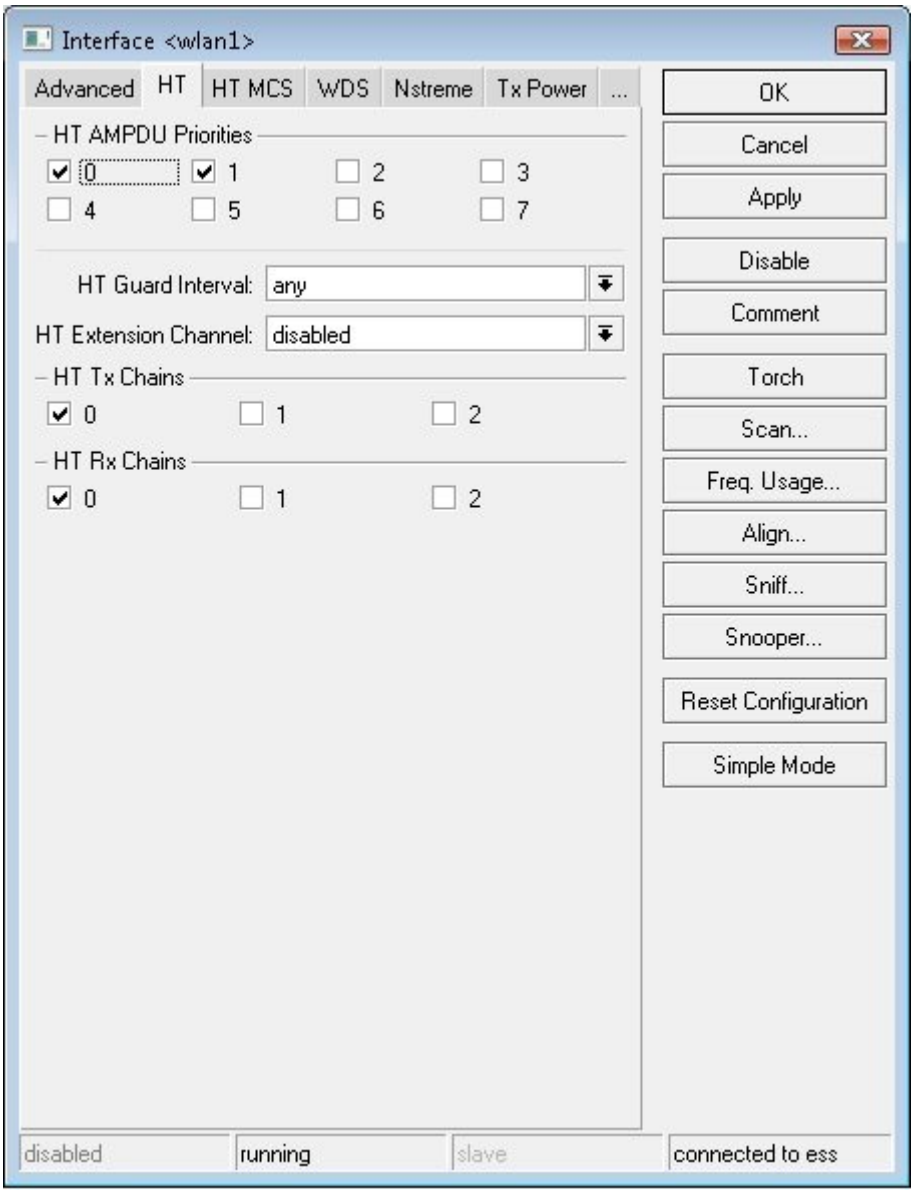
These previous 2 options can be changed only from terminal, but appear in winbox.

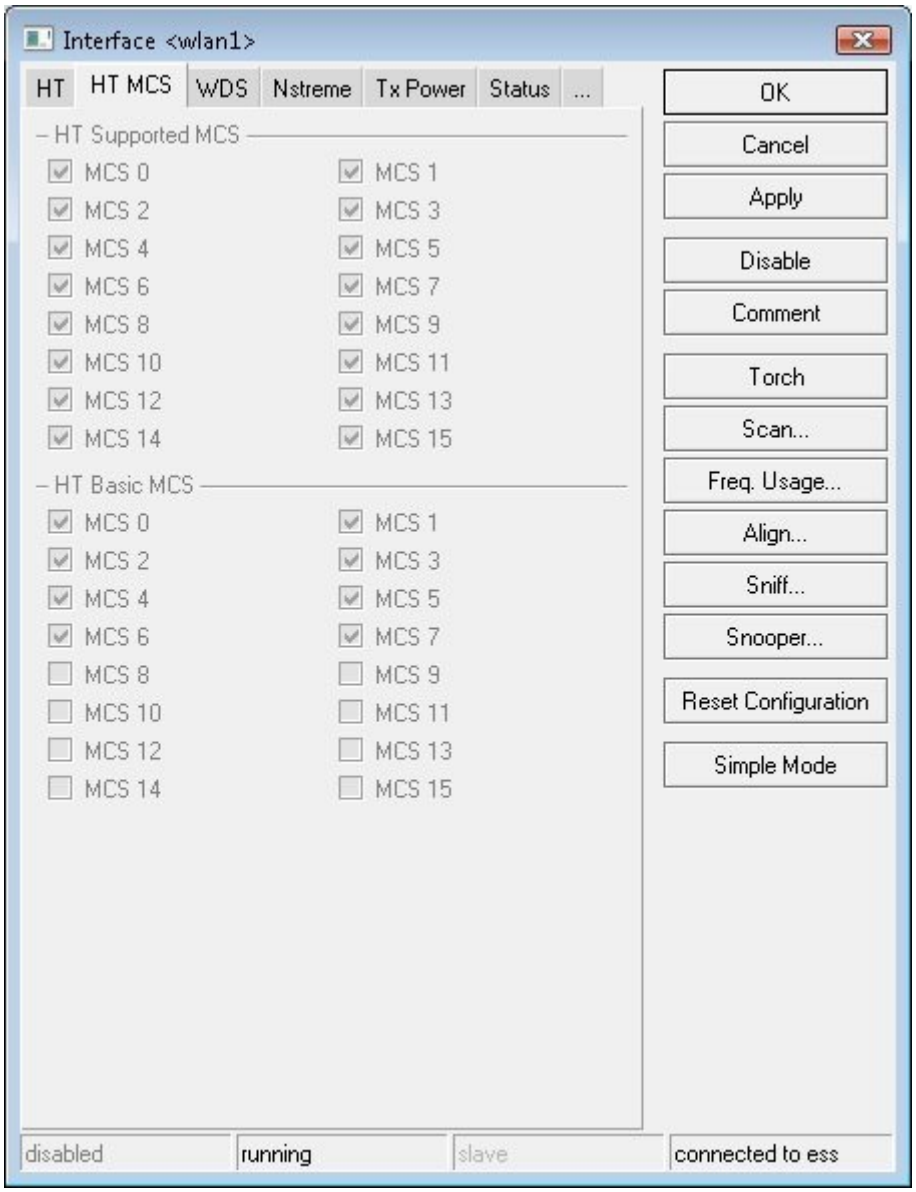
Non-Winbox viewable configuration options

- **ht-amsdu-limit** (0..8192)
- **ht-amsdu-threshold** (0..8192)

These last two only appear in terminal at this time.

Winbox 802.11n configuration tabs





Configurable options, in depth.

- **ht-extension-channel** (above-control | below-control | disabled)

The current 802.11n draft supports a method of channel bonding for both 2.4Ghz and 5.Ghz systems. There is 1 20Mhz channel defined as the "control channel" while the secondary channel can then be set to sit above or below the control channel. Seeing as 2.4Ghz only has 3 'usable' channels (1,6,11) its recommended to use this on a 5Ghz where there are more available channels.

- **ht-rxchains** (0,1,2 - any combination of these)
- **ht-txchains** (0,1,2 - any combination of these)

Which antenna connector to use for TX or RX. You can use one of these or multiple (depending on your antenna configuration). On MikroTik R2n and R52n card there are 2 antenna connectors and to use both of them ht-tx/rx-chains should be set to 0,1.

- **ht-ampdu-priorities** (0,1,2,3,4,5,6,7 - any combination of these)

A-MPDU (Aggregated Mac Protocol Data Unit) allows the transmissions of multiple ethernet frames to a single location as burst of up to 64kbytes This is performed on the hardware itself.

- **ht-guard-interval** (any | long)

In 802.11n the OFDM Guard interval (GI) is decreased from 800ns to 400ns, without any futher info I am assuming that the 'any' is the new 400ns timing and 'long' is the old 800ns

Example configuration

As above I used 2 x RB411's with 2.4ghz 802.11n cards for my test setup, here is a sample config's for each one.

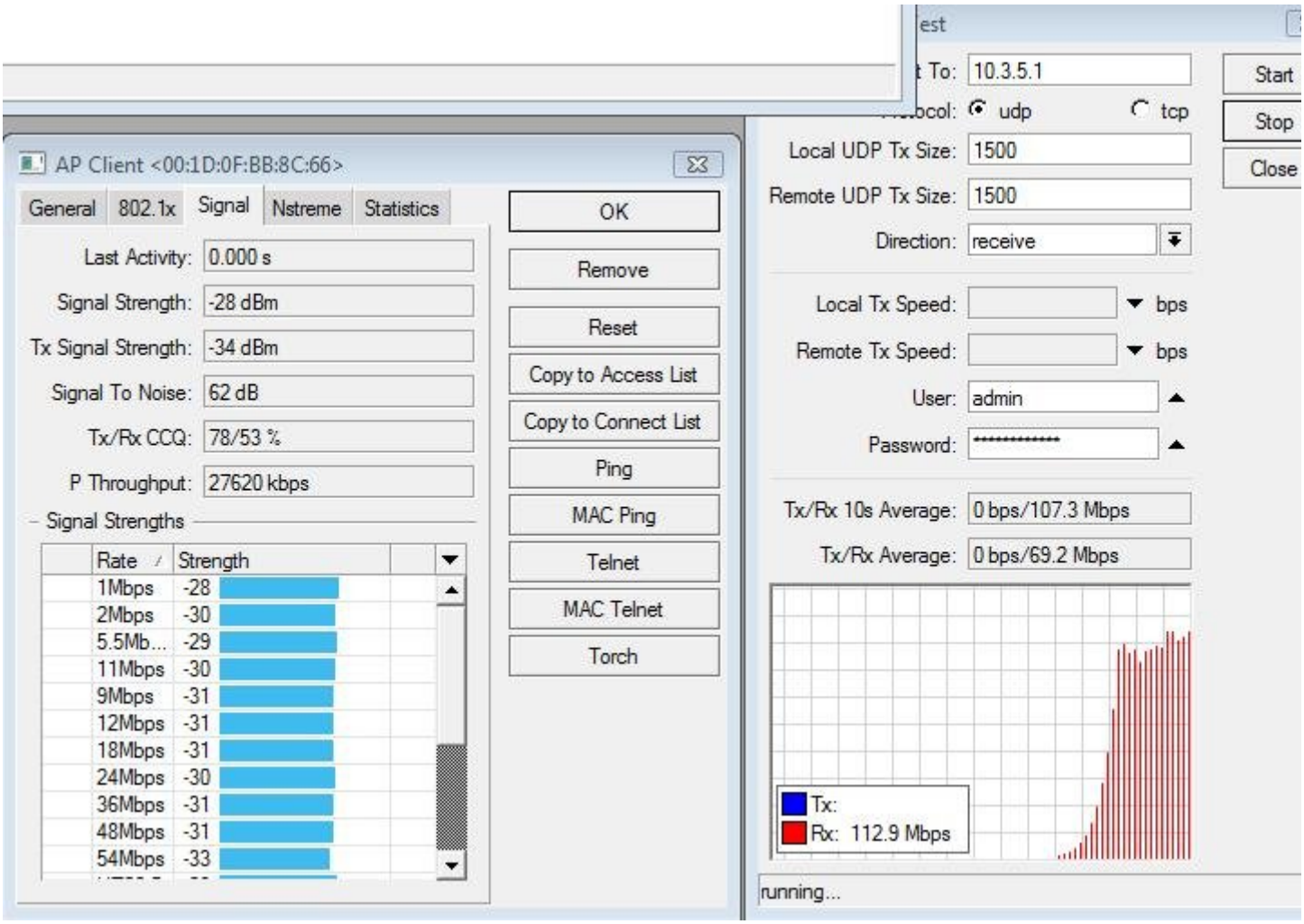
Access Point

```
/ip address
add address=192.168.1.1/24 broadcast=192.168.1.255 comment="" disabled=no interface=wlan1 network=192.168.1.0
/interface wireless
set 0 ack-timeout=dynamic adaptive-noise-immunity=none allow-sharedkey=no antenna-gain=0 antenna-mode=ant-a ar
    basic-rates-b=1Mbps comment="" compression=no country=no_country_set default-ap-tx-limit=0 default-authent
    yes dfs-mode=none disable-running-check=no disabled=no disconnect-timeout=3s frame-lifetime=0 frequency=24
    ht-ampdu-priorities=0 ht-amsdu-limit=8192 ht-amsdu-threshold=8192 ht-basic-mcs=mcs-0,mcs-1,mcs-2,mcs-3,mcs
    ht-guard-interval=any ht-rxchains=0,2 ht-supported-mcs=mcs-0,mcs-1,mcs-2,mcs-3,mcs-4,mcs-5,mcs-6,mcs-7,mcs
    ht-txchains=0,2 hw-fragmentation-threshold=disabled hw-protection-mode=none hw-protection-threshold=0 hw-r
    2007 mode=ap-bridge mtu=1500 name=wlan1 periodic-calibration=default periodic-calibration-interval=60 prea
    proprietary-extensions=post-2.9.25 radio-name=001D0FBB8C66 rate-set=default scan-list=default security-pro
    00:00:00:00:00:00 supported-rates-a/g=6Mbps,9Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps,54Mbps supported-rate
    wds-mode=disabled wmm-support=enabled
```

Wireless Station

```
/ip address
add address=192.168.1.2/24 broadcast=192.168.1.255 comment="" disabled=no interface=wlan1 network=192.168.1.0
/interface wireless
set 0 ack-timeout=dynamic adaptive-noise-immunity=none allow-sharedkey=no antenna-gain=0 antenna-mode=ant-a ar
    basic-rates-b=1Mbps comment="" compression=no country=no_country_set default-ap-tx-limit=0 default-authent
    yes dfs-mode=none disable-running-check=no disabled=no disconnect-timeout=3s frame-lifetime=0 frequency=24
    ht-ampdu-priorities=0 ht-amsdu-limit=8192 ht-amsdu-threshold=8192 ht-basic-mcs=mcs-0,mcs-1,mcs-2,mcs-3,mcs
    ht-guard-interval=any ht-rxchains=0,2 ht-supported-mcs=mcs-0,mcs-1,mcs-2,mcs-3,mcs-4,mcs-5,mcs-6,mcs-7,mcs
    ht-txchains=0,2 hw-fragmentation-threshold=disabled hw-protection-mode=none hw-protection-threshold=0 hw-r
    2007 mode=station mtu=1500 name=wlan1 periodic-calibration=default periodic-calibration-interval=60 preamb
    proprietary-extensions=post-2.9.25 radio-name=001D0FBB8C1E rate-set=default scan-list=default security-pro
    00:00:00:00:00:00 supported-rates-a/g=6Mbps,9Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps,54Mbps supported-rate
    wds-mode=disabled wmm-support=enabled
```

My first test gave similar to the following results, thou I expect to improve on these shortly.



- This page was last modified 15:12, 28 May 2009.