

NETGEAR Nighthawk (R7000) Router Setup Guide For AR-Drone Use (Multiple Drones)

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0 Introduction

AR-Drones have their own internal routers. In order to send commands to an AR-Drone (eg. via ROS) you will need to connect your computer to the drone's wifi network. In order to connect to multiple drones you will need to have your router create a local LAN distributing its own IP address using DHCP. You will also need to reconfigure each drones network settings to have it connect to the new LAN, this is explained in a separate guide titled "Launching Multiple AR-Drones Guide"

In the robotics room at MSL we use the NetGear Nighthawk (R7000), and thus this setup will guide you through configuring this specific router.

Note:

There is a separate guide available for configuring your router and drones to use a single drone. This guide will also work for a single drone, but is more complicated. This over-complication is not needed if you only intend to use a single drone.

1 Pre-Setup

1. Connect the NetGear router to power and an ethernet cable from the PC to one of the numbered ports (not the internet port) on the back of the router.

1.1 Reset NetGear router to factory defaults

1. Take a thin screwdriver or anything else and press the "reset" button on the back of the router, until the lights turn off except for 2 lights (approx. 7 seconds)
2. Wait for the router to restart itself and the power light appears white.

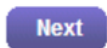
2 Router Configuration

2.1 Enter router configuration via web browser

1. Open your favorite web browser.
 - (a) If you opened Google Chrome or Microsoft Edge re-evaluate your life, close the browser, and open a nice, open-source, web browser.
2. Make sure your proxy settings are off!
3. Go to <http://www.routerlogin.net/>
4. After the router finished searching for stuff, choose:

☒ No, I want to configure the Internet connection myself.

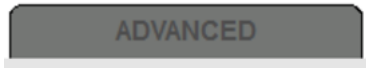
and:



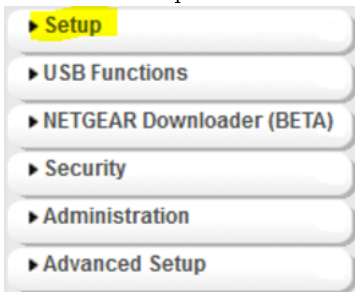
5. Default Username: admin
Default Password: password

2.2 Configure Wireless Settings

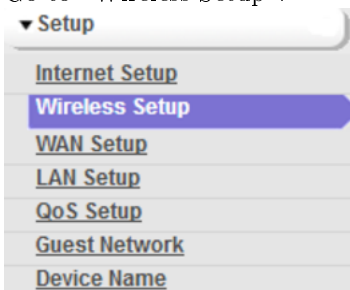
1. Go to the "ADVANCED" tab:



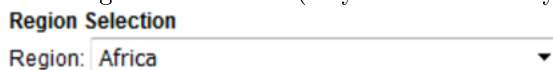
2. Click on "Setup":



3. Go to "Wireless Setup":



- (a) Set "Region" to "Africa" (may not be necessary):



- (b) Under "Wireless Network (2.4GHz b/g/n)" and "Wireless Network (5GHz a/n/ac)" do the following: (5GHz maybe not necessary, but do it their to stay on the safe side):

- i. Change "Name (SSID)" to an SSID of your choice (in this guide we choose "dronenet", remember this because it will be relavent in the future)

Name (SSID):

- ii. In "Security Options" choose "None":

Security Options

- ☒ None
- ☐ WPA2-PSK [AES]
- ☐ WPA-PSK [TKIP] + WPA2-PSK [AES]
- ☐ WPA/WPA2 Enterprise

(c) Everything else should stay as is, so the final result should look like:

Region Selection
Region: Africa ▼

☐ Enable Smart Connect - Let the router intelligently select the best WiFi band 2.4 GHz or 5 GHz for your WiFi connections. Smart Connect requires the 2.4 GHz and 5 GHz networks to use the same WiFi network name (SSID), security options and password.

Wireless Network (2.4GHz b/g/n)
☒ Enable SSID Broadcast
☒ Enable 20/40 MHz Coexistence
Name (SSID): dronenet
Channel: Auto ▼
Mode: Up to 600 Mbps ▼
Transmit Power Control: 100% ▼

Security Options
☒ None
☐ WPA2-PSK [AES]
☐ WPA-PSK [TKIP] + WPA2-PSK [AES]
☐ WPA/WPA2 Enterprise

Wireless Network (5GHz a/n/ac)
☒ Enable SSID Broadcast
Name (SSID): dronenet
Channel: 44 ▼
Mode: Up to 289 Mbps ▼
Transmit Power Control: 100% ▼

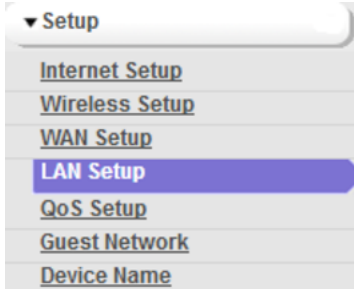
Security Options
☒ None
☐ WPA2-PSK [AES]
☐ WPA-PSK [TKIP] + WPA2-PSK [AES]
☐ WPA/WPA2 Enterprise

(d) Click "Apply" at the top:

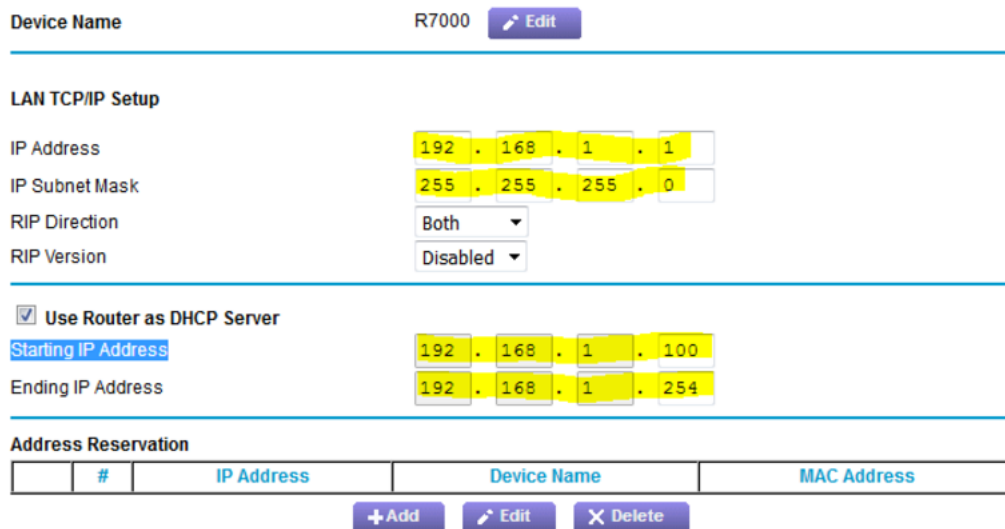
Apply ►

2.3 Configure LAN Settings

1. Go to "LAN Setup" on the left:



- (a) Make sure that the following is set:
 - i. "IP Address" is set to "192.168.1.1"
 - ii. "IP Subnet Mask" is set to "255.255.255.0"
 - iii. "RIP Direction" and "RIP Version" stay as they were.
 - iv. "Use Router as DHCP Server" is ticked and:
 - A. "Starting IP Address" is set to "192.168.1.100"
 - B. "Ending IP Address" is set to "192.168.1.254"
- (b) By the end it should look something like this:

A screenshot of the "LAN TCP/IP Setup" configuration page. At the top, the "Device Name" is "R7000" with an "Edit" button. The "LAN TCP/IP Setup" section contains: "IP Address" set to 192.168.1.1, "IP Subnet Mask" set to 255.255.255.0, "RIP Direction" set to "Both", and "RIP Version" set to "Disabled". Below this, the "Use Router as DHCP Server" checkbox is checked. The "Starting IP Address" is set to 192.168.1.100 and the "Ending IP Address" is set to 192.168.1.254. At the bottom, there is an "Address Reservation" table with columns for #, IP Address, Device Name, and MAC Address. Below the table are buttons for "+ Add", "Edit", and "X Delete".

#	IP Address	Device Name	MAC Address
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2. Click "Apply" at the top:



3 Drone Configuration

For drone configuration, connection to network and launching see the guide titled “Launching Multiple AR-Drones Using ROS Guide”