

TP-Link TL-MR3020

See also [TL-MR3040](#) and [TL-WR703N](#) or [TP-Link TL-MR10U](#), [TP-Link TL-MR11U](#), [TP-Link TL-MR12U](#) and [TP-Link TL-MR13U](#)

Note: Many of these routers are marketed as a "3G travel router" but **none actually include a 3G modem** - the marketing term rather means that the OEM firmware supports a certain range of 3G/4G modems to be externally connected to USB because it contains drivers for those USB modems! Ignore that, because with OpenWrt ANY router with USB supports 3G/4G hardware ... 😊



The router is powered through a mini-USB socket stub (5V) and comes with a USB power adapter.

Supported Versions

Model Version	Launch Date	OpenWrt Version Supported	Model Specific Notes
v1.0	2011-12	Trunk (r29651 [https://dev.openwrt.org/changeset/29651])	AR9331 chipset
v1.4	2012-01	Trunk (r29763 [https://dev.openwrt.org/changeset/29763], probably earlier)	AR9331 chipset
v1.6	2012-03	Trunk (r30753 [https://dev.openwrt.org/changeset/30753], probably earlier)	AR9331 chipset
v1.7	2012-05	12.09-RC1, Trunk (r32786 [https://dev.openwrt.org/changeset/32786])	AR9331 chipset
v1.8	??	12.09-RC1 (tested), Trunk (tested)	AR9331-AL1A; internal serial port has no pins, only solder-pads (P1 clearly visible)
v1.9	??	12.09 (tested)	AR9331-AL1A

The current release OEM source code available at: <http://www.tp-link.com/resources/gpl/150Router.rar> [<http://www.tp-link.com/resources/gpl/150Router.rar>]

Features

CPU	Ram	Flash	Network	USB	Serial	JTag
Atheros AR7240@400MHz	32MiB	4MiB	1 x 100MBit	1 x 2.0	Yes	No

- SoC: Atheros AR9330 rev 1
- 802.11 b/g/n 150 Mbps
- Powered via USB B-Mini (5 Volts)
- Tiny form factor
 - 5.7 cm x 5.7 cm PCB
 - 6.7 cm x 7.4 cm x 2.2 cm case

Input voltage: the router will function correctly when powered with voltages as low as 3.3 Volts (determined experimentally) instead of 5 V USB-Power. Thus, it can be powered directly from one single Li-Ion battery (which usually starts fully charged at 4.2 V and has a nominal voltage of 3.7) without the need for an external 5 V adapter.

Installation

Currently the TL-MR3020 is supported in the stable OpenWrt version Attitude Adjustment.

So you can either download a daily-built snapshot or build your own from sources.

- Download the latest Attitude Adjustment from here [http://downloads.openwrt.org/attitude_adjustment/12.09/ar71xx/generic/openwrt-ar71xx-generic-tl-mr3020-v1-squashfs-factory.bin] (recommended)
- Download the latest trunk snapshot here [<http://downloads.openwrt.org/snapshots/trunk/ar71xx/openwrt-ar71xx-generic-tl-mr3020-v1-squashfs-factory.bin>] (risky)



WARNING: Snapshot images are always risky. Check the forum discussion for latest opinions on available images.

Method Using Web GUI (Recommended)

Connect to the TL-MR3020 router via Ethernet cable at IP address **192.168.0.254**, log in to the router's web GUI (default login/password: **admin / admin**) and overwrite the factory firmware by installing the **openwrt-ar71xx-generic-tl-mr3020-v1-squashfs-factory.bin** firmware image like a regular firmware update.

Wait for the progress bar to finish twice (the device will reset itself in the process), and proceed with basic configuration as with any fresh OpenWRT install.

Web GUI upload has been confirmed to work with v1.0, v1.4, v1.6, v1.7, v1.8 and 1.9 hardware revisions and requires no serial access unless something goes wrong.

See forum [<https://forum.openwrt.org/viewtopic.php?pid=154203#p154203>] if you encounter problems.

Manual Method Using Serial Console and TFTP (Experts)

To install OpenWrt from the U-Boot console, you need to install a TFTP server on your computer (**tftp-hpa** is recommended).

Then download OpenWrt factory image to `/srv/tftp` (for example), and execute the TFTP server by typing **tftpd -l -s /srv/tftp**.

After a 1-2 seconds it shows **Autobooting in 1 seconds**, when displaying this enter **tpl** immediately.

You will get a U-Boot-console, it shows as **hornet>**, and you must enter the following commands:

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Flashing hundreds of devices using the web interface can be a real pain. You can use this shell script to automate it:

Install Snapshot Image

For this example:

(You need fill these by your network properities)

Terminal program:

```
Putty
```

After install trunk image wait few minutes then recycle power router and set your computer ip address to:

```
ip:      192.168.1.2
subnet:  255.255.255.0
gateway: 192.168.1.1
```

Start your terminal and connect 192.168.1.1 via telnet (port 23). Right now LAN INTERFACE include wireless too. We need to set wireless to WAN interface. Change wireless configuration below example.

```
vi /etc/config/wireless

config wifi-device radio0
    option type      mac80211
    option channel    9
    option hwmode     11ng
    option path        'platform/ar933x_wmac'
    option htmode      HT20
    list ht_capab      SHORT-GI-20
    list ht_capab      SHORT-GI-40
    list ht_capab      RK-STBC1
    list ht_capab      DSSS_CCK-40
    option disabled    0
    option txpower     27

config wifi-iface
    option device      radio0
    option network      wan
    option mode         sta
    option ssid         Example-network
    option encryption   psk2
    option bssid        11:11:11:11:11:11
    option key          PaSSw0rD
```

Wireless setup completed now we need to get ip WAN interface via main router dhcp server. Set your network config like below example.

```
vi /etc/config/network

config interface 'loopback'
    option ifname 'lo'
    option proto 'static'
    option ipaddr '127.0.0.1'
    option netmask '255.0.0.0'

config globals 'globals'
    option ula_prefix 'fd48:93ld:0f42::/48'

config interface 'lan'
    option ifname 'eth0'
    option type 'bridge'
    option proto 'static'
    option ipaddr '192.168.1.1'
    option netmask '255.255.255.0'
    option ip6assign '60'

config interface 'wan'
    option proto 'dhcp'
    option _orig_ifname radio0
    option _orig_bridge false
```

Reboot your router

```
reboot
```

Your terminal session will be closed. you need reconnect to router.

test your router if your router properly connected internet you should something like below lines:

```
ping -c3 www.google.com
PING www.google.com (xxx.xxx.xxx.xxx): 56 data bytes
64 bytes from xxx.xxx.xxx.xxx: seq=0 ttl=52 time=88.295 ms
64 bytes from xxx.xxx.xxx.xxx: seq=1 ttl=52 time=87.783 ms
64 bytes from xxx.xxx.xxx.xxx: seq=2 ttl=52 time=87.503 ms

--- www.google.com ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 87.503/87.860/88.295 ms
```

Now you can install Luci and enable it by below commands:

```
opkg update
opkg install luci
/etc/init.d/uhttpd enable
/etc/init.d/uhttpd start
```

Reboot your router one last time

```
reboot
```

Now you can access luci interface by 192.168.1.1 with your browser

VI editor basic using (for beginners)

```
arrow keys: move cursor
a:          enter write mode
DEL:        delete character
ESC:        exit write mode
```

even exit write mode it wont exit vi editor or write your changing for these you need when you out of write mode you have to give these command to vi:

```
:w    write changing to router
:q    exit vi editor and return to command shell
```

```
:wq write & exit
:q! you cant exit vi when you made some changes. If you want exit vi without write changes you have to use these to exit vi editor.
```

this should enough for set this router

Failsafe Mode

- Set your computer's IP to 192.168.1.2, subnet 255.255.255.0
- Connect the TL-MR3020 to your computer via ethernet
- Power on the TL-MR3020
- When the WPS Button starts to blink , push it until it blinks faster
- The device is now in Failsafe-Mode
- You may access it by using **telnet 192.168.1.1**

Info on resetting to open wrt defaults can be found at: generic.failsafe [<http://wiki.openwrt.org/doc/howto/generic.failsafe#in.failsafe.mode>]

Downgrade Attitude Adjustment from Trunk

Downgraded wrong image (jff2 instead of squashfs) cause cant get ip or connect to luci. Failsafe mode still working but firstboot command wont work because it is already on working. You can upload correct firmware and write it with mtd command but failsafe mode can't connect internet. You need to local tftp server to get firmware.

Set your pc ip 192.168.1.10/24 and gateway 192.168.1.1. Download mongoose http server [<http://code.google.com/p/mongoose/>] and correct firmware same folder and start mongoose. It will host all files in his path (if you start it from downloads folder it will host all files in downloads folder)

now we can get firmware via failsafe telnet:

```
wget http://192.168.1.10:8080/openwrt-ar7lxx-generic-tl-mr3020-v1-squashfs-factory.bin
mtd -r write /tmp/openwrt-ar7lxx-generic-tl-mr3020-v1-squashfs-factory.bin firmware
Writing from /tmp/openwrt-ar7lxx-generic-tl-mr3020-v1-squashfs-factory.bin to firmware ...
Rebooting ...
/bin/sh: /sbin/reboot: Input/output error
```

DONT DO ANYTHING. Just wait and router reboot itself. wait few minutes and you will able to reach Luci via 192.168.1.1.

Restoring Original Firmware

Restoring the original firmware follows the usual procedure:

- Get original firmware image into /tmp
- Make sure it's in the correct format
- Flash with *mtd*
- Factory reset



WARNING: The following steps were tested successfully on an **MR-3020 V1.4**. Make sure that the firmware link used in the instructions below **matches your hardware revision** by following the firmware link in the link section below.



WARNING: Don't use the newest firmware on an **MR-3020 V1.8** (and maybe on other hardware revisions too) for restoring the original firmware! With the firmware file "mr3020nv1_en_3_15_2_up_boot(130326).bin" it will fail with the error message "Failed to erase block". Always use the recommended commands below.



WARNING: On V1.8 even if you succeed with firmware upload, after the router reboot the web interface will not work and you will not be able to return either to OpenWRT, nor to working original flash. What's even worse is, that the HW revision is only visible on the inside of the router - on the Ethernet port sticker, so you have to open the device up.



WARNING: There is common scenario that the device is unable to boot after uploading incorrect firmware. Some people advice to obtain an original image with no boot-loader included (the file does NOT contain work "boot" in it's name). It worked for me when I downloaded file "mr3020nv1_en_3_14_2_up(120817).bin" and flashed it with mtd command. I've downloaded the file from here [http://www.generalfiles.biz/download/g5636c1925h32i0/TL-MR3020_V1.00_120817.zip.html]

First, set the mode switch to *WISP*. Without it, you might have trouble connecting after the reboot. Connect via ssh/telnet/serial and use the following commands:

```
# opkg update && opkg install unzip
# cd /tmp
# wget http://www.tp-link.com/Resources/software/TL-MR3020_V1_120320.zip
# unzip TL-MR3020*.zip
# mtd -r write mr3020*up*.bin firmware
```

After a couple of seconds, the router reboots automatically. Reconnect, open <http://192.168.0.254> [<http://192.168.0.254/>], log in with *admin* / *admin*, and do a factory reset with *System Tools* / *Factory Defaults*.

Basic Configuration

Since this part is identical to the one recommended for generic devices, see [Basic configuration](#).

Original Flash Layout

Please read the article [Flash Layout](#) for a better understanding. It contains a couple of explanations. Then let's have a quick view at flash layout of this particular device:

TP-Link MR3020 Flash Layout stock firmware					
Layer0	spi0.0: 4096KiB				
Layer1	mtd0	mtd1	mtd2	mtd3	mtd4
Size in KiB	128KiB	1024KiB	2816 KiB	64KiB	64KiB
Name	<i>u-boot</i>	<i>kernel</i>	<i>rootfs</i>	<i>config</i>	<i>art</i>
mountpoint	none	none	/	none	none
filesystem	none	none	SquashFS	none	none

ART = Atheros Radio Test - it contains RF calibration data for the wifi. If it is missing or corrupt, wireless won't come up anymore.

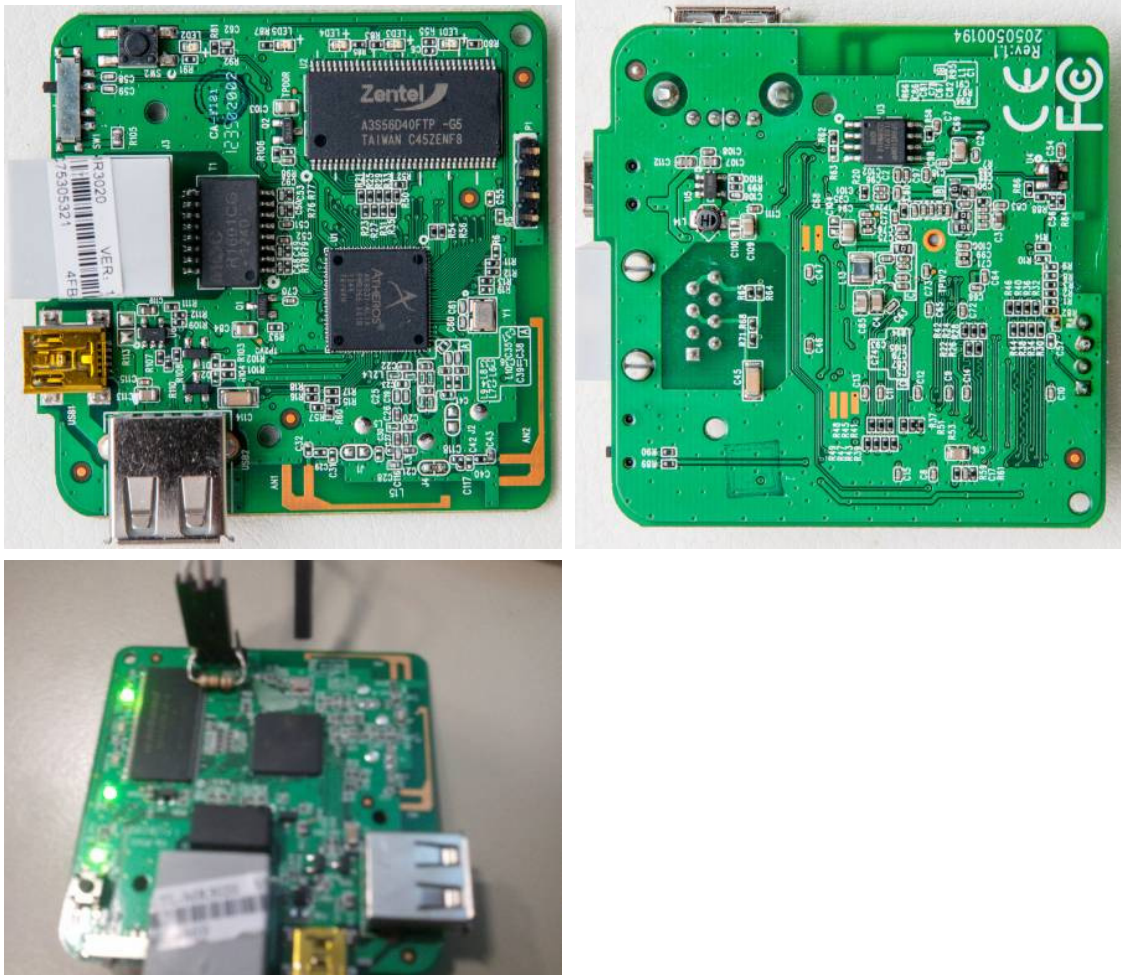
Hardware

Opening the Case

The case consists of two parts: a white base and a gray lid. The lid has two snap hinges, one right above the mini USB connector and one on the opposite side about 10 mm left of the "TP-LINK" logo. The lid is additionally glued in place on the underside on all four sides. You can try to pry it open with a thin but very stable blade tool. Start above the ethernet port where the case is not glued, and work your way around the glued corner towards the "3G USB" port (no glue there) until you reach the logo side. You should now be able to peek inside the case on the loose corner.

Next proceed along to the LED side, but beware of the fragile light conductors running straight down beneath the clear plastic. They easily bend or break when you push-in your tool too far. Once three sides are open, you can steadily lift the lid until the remaining side breaks loose and neatly frees the second hinge in the process. If you work carefully and manage not to break either one of the two hinges, the gray lid should snap neatly back into place after some manual cleaning with a cutter knife.

Internal Pictures



Hardware summary

	IC	Info	Datasheet
Processor	AR7240		Click
Flash ROM	Spansion S25FL032P		http://www.spansion.com/Support/Datasheets/S25FL032P_00.pdf [http://www.spansion.com/Support/Datasheets/S25FL032P_00.pdf]
SDRAM	Windbond W9425G6JH		http://www.winbond.com/NR/rdonlyres/11505884-F632-41F9-9438-A3EC025FEAED/0/W9425G6JH.pdf [http://www.winbond.com/NR/rdonlyres/11505884-F632-41F9-9438-A3EC025FEAED/0/W9425G6JH.pdf]
	Zentel A3556D40FTP-G5		
Chipset (Wi-Fi controller)	AR9331	1x1	http://see.sil088.com/w/images/6/69/AR9331.pdf [http://see.sil088.com/w/images/6/69/AR9331.pdf]

Serial Console

Pinout

1	2	3	4
TX	RX	GND	VCC
			SJ1

Pin 1 is clearly marked on the board.

To get a reliable serial connection, **you might have to connect a 10k pullup resistor** between TX and VCC. This is because the TX pin is connected to a voltage divider (2x5.6k) and a capacitor is put between the real pin and the TX connector. Some serial adaptors might work without the pullup resistor (confirmed for one ST3232-based adaptor), but others definitely require it (confirmed for a FTDI FT232RL-based model).

If you need a serial adaptor, you can build a serial hack adapter [http://buffalo.nas-central.org/index.php/Use_a_Nokia_Serial_Cable_on_an_ARM9_Linkstation#Preparing_the_Cable] (DKU-5, CA-42). Relatively cheap, off-the-shelf and known-to-work alternatives would be SparkFun's FTDI Basic Breakout 3.3V [http://www.sparkfun.com/products/9873] and FTDI Serial Cable 3.3V [http://www.sparkfun.com/products/9717].

The right settings for accessing the serial console are as follows:

Bits per second: **115200**

Data bits: **8**

Stop bits: **1**

Parity: **None**

Flow control: **None**

If you are using a Linux or Mac system, the easiest way to connect to the serial console would be the **screen** command. It comes pre-installed on OS X, but must usually be installed on Linux systems. When installed, just type in a terminal:

```
screen /dev/[device name] 115200
```

where [device name] is the name of your serial adaptor, usually tty.usbserial* on Mac and ttyUSB* on Linux. To quit screen, press CTRL-a, followed by CTRL-k, followed by y.

U-Boot Bootloader Console

The password to get the U-Boot prompt is **tpl**. You must type it quickly while the serial console is displaying:

```
[...]
ag7240_phy_setup
eth1 up
eth0, eth1
Autobooting in 1 seconds
[type tpl here]
```

U-Boot accepts several commands. Type **help** to display the list of available commands.

```
hornet> help
?      - alias for 'help'
bootm  - boot application image from memory
cp      - memory copy
erase  - erase FLASH memory
help    - print online help
md      - memory display
mm      - memory modify (auto-incrementing)
mtest  - simple RAM test
mw      - memory write (fill)
nm      - memory modify (constant address)
printenv- print environment variables
progmact- Set ethernet MAC addresses
reset   - Perform RESET of the CPU
setenv  - set environment variables
tftpboot- boot image via network using TFTP protocol
version - print monitor version
```

Linux Console

Once the original firmware has booted up completely, you can press **return** to activate the Linux login prompt.

The password to get a root Shell access is **Sup**:

```
TL-MR3020 mips #185 Fri Oct 21 16:26:50 CST 2011 (none)
TL-MR3020 login: root
password: Sup
```

GPIOs

→ **port.GPIO** The AR933x platform provides 30 GPIOs. Some of them are used by the router for status LEDs, buttons and other stuff. The table below shows the results of some investigation:

GPIO	Common Name	PCB Name	Voltage level at GPIO in output-mode		gpioX/value in input-mode when GPIO is:		
			gpioX/value=1	gpioX/value=0	Floating	Pulled to GND	Pulled to Vcc
0	WLAN LED	LED4					
1							
2							
3							
4							
5							
6							
7	unused Pulled to ground	R15					
8	USB power	R112	2.8V				
9							
10							
11	WPS button						
12							
13							
14							
15							
16							
17	Ethernet LED	LED5					

18	Sliding Sw.						
19							
20	Sliding Sw.						
21							
22							
23							
24							
25							
26	WPS LED	LED2					
27	Internet LED	LED3					
28							
29	unused Pulled to ground	R17					

To make the GPIOs available via sysfs, the required ones have to be exported to userspace, as it is explained on a page of the Squidge-Project [http://squidge.sourceforge.net/gpio/]. Kernel modules occupying that resource need to be removed before (e.g. "leds-gpio" and "gpio-buttons"). In output-mode, voltage levels of the GPIOs were measured against GND, after the value 1 or 0 had been written to `/sys/class/gpio/gpioX/value`. In input-mode, the value of the file `/sys/class/gpio/gpioX/value` was read when the GPIO was floating (initial state), pulled to GND or pulled to Vcc.

The sliding switch has the following truth table:

Mode Switch	GPIO18	GPIO20
3G	1	0
WISP	0	1
AP	1	1

LEDs

How to configure LEDs in general, see the LED section in the [system](#).

The TL-MR3020 has 5 LEDs:

LED name	LED print	Internal name	Trigger
Power	Power symbol	N/A (fixed supply)	N/A
3G	Internet symbol	tl-mr3020:green:3g	USB:1-1
Wireless LAN	WLAN symbol	tl-mr3020:green:wlan	phy0tpt
LAN	LAN symbol	tl-mr3020:green:lan	netdev:eth0
WPS	WPS	tl-mr3020:green:wps	User preference

Buttons

→ [hardware.buttons](#) The TP-Link TL-MR3020 has one button and one sliding switch with three positions:

BUTTON	Event
Sliding Switch	BTN_0 and BTN_1
WPS Button	WPS

The WPS button is located at the top (illuminated by the WPS LED) and can be easily pressed with a finger. The sliding switch is located at the side and has three positions: 3G, WISP, AP.

Sample scripts to read the sliding switch: on boot [https://forum.openwrt.org/viewtopic.php?id=172111#p172111], on switch change [https://forum.openwrt.org/viewtopic.php?id=172110#p172110], to change network configurations [https://gist.github.com/jefferyto/8010733]

Bootloader Mods

1. you could read about [bootloader](#) in general and about [Das U-Boot](#) in particular.

U-Boot 1.1.4 modification for routers

Forum member pepe2k [https://forum.openwrt.org/profile.php?id=72549] made a modification of **U-Boot 1.1.4** for **Qualcomm Atheros** SoCs based devices (the project is still being developed, so new devices and SoCs will be supported in the future). Up to date information, binary images and sources can be found on official GitHub repository [https://github.com/pepe2k/u-boot_mod].

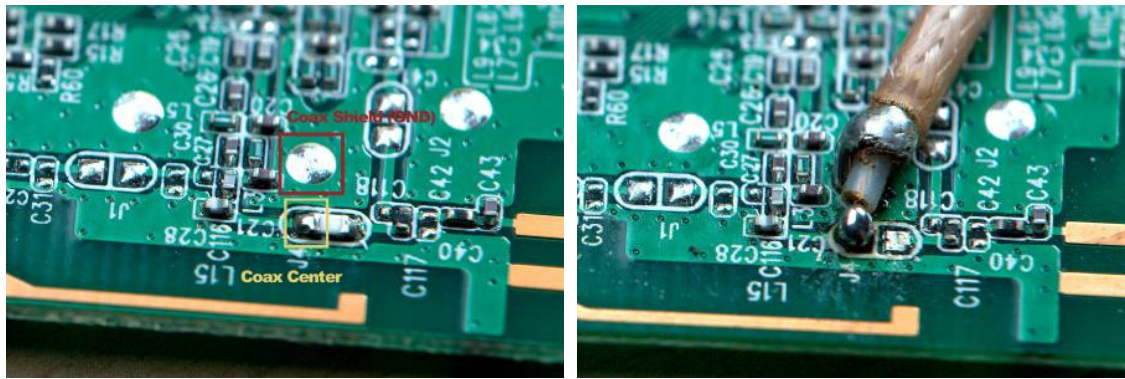
This modification started from wr703n-uboot-with-web-failsafe [http://code.google.com/p/wr703n-uboot-with-web-failsafe/] project, but supports more devices, all modern web browsers, has a lot of improvements and other modifications (like U-Boot NetConsole, custom commands, overclocking possibilities etc.).

More information:

- Official repository on GitHub: U-Boot 1.1.4 modification for routers [https://github.com/pepe2k/u-boot_mod]
- Discussion about this project on OpenWrt forum [https://forum.openwrt.org/viewtopic.php?id=43237]
- An article (in Polish) about one of the first version of this project on www.tech-blog.pl [http://www.tech-blog.pl/2013/03/29/zmodyfikowany-u-boot-dla-routerow-tp-link-z-atheros-ar9331-z-trybem-aktualizacji-oprogramowania-przez-www-i-konsola-sieciowa-netconsole/]

Hardware Hacks

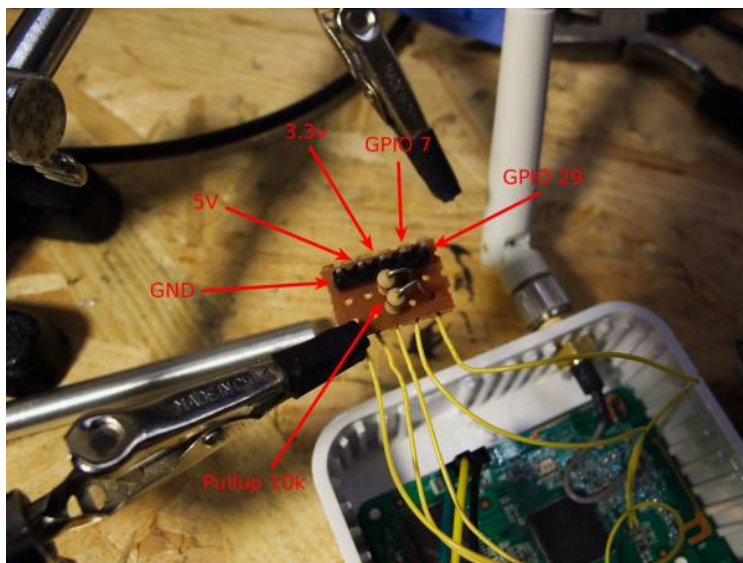
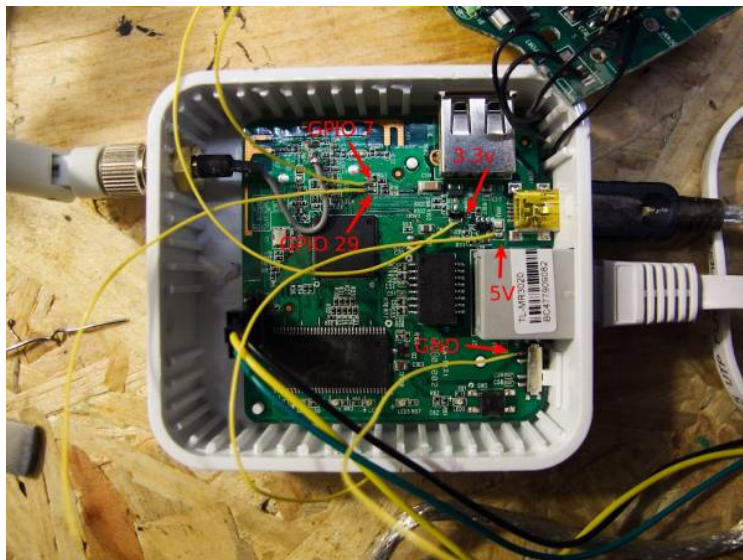
External Antenna Hack



If you want to add an external antenna connector or would like to know more about the MR3020 power consumption in different op-states you can find more info Apollo-NG MR3020 External Antenna Hack [<https://apollo.open-resource.org/lab:argus#modifications>]

Adding I2C Bus

If you want to add I2C bus to your MR3020, you can use GPIO 7 and 29. Remove R15 and R17, then add pullup between 3.3v and gpio pin.



Next step, add this line

```
i2c-gpio-custom bus0=0,7,29
```

to `/etc/modules.d/99-i2c`

and load `i2c-gpio-custom`

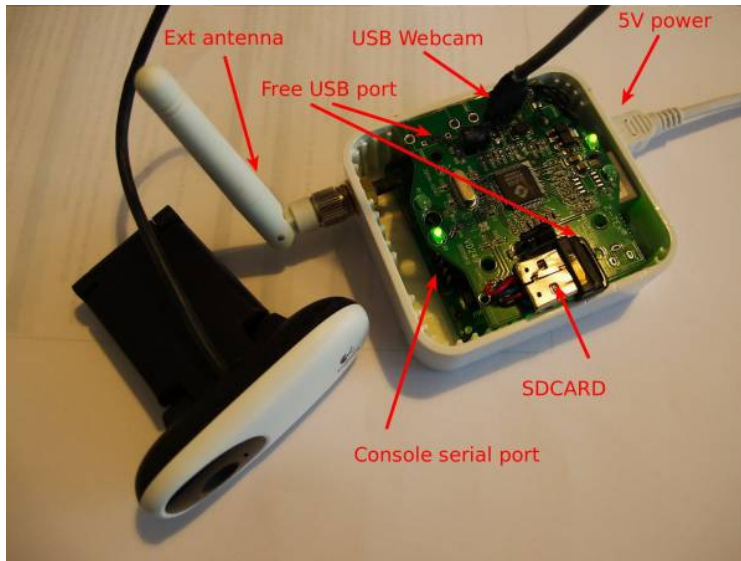
You can find more info in french here <http://www.equinoxefr.org/post/2012/11/12/mr3020-et-i2c-avec-les-gpio/> [<http://www.equinoxefr.org/post/2012/11/12/mr3020-et-i2c->

avec-les-gpio/]

USB Hub Hack

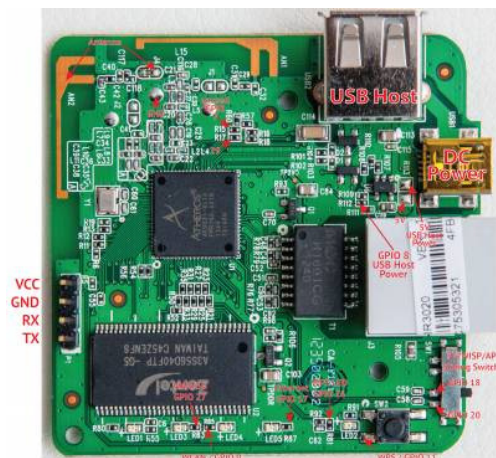
You can embedded usb hub to add more peripheral to your best router.

I hack a 3\$ STOREX usb hub, a 2\$ μ SD card reader and a 10\$ webcam to build a robot with my MR3020.



More info in french on <http://www.equinoxefr.org/post/2012/11/05/projet-de-robot-wifi-torture-dun-routeur-tplink-mr3020/> [<http://www.equinoxefr.org/post/2012/11/05/projet-de-robot-wifi-torture-dun-routeur-tplink-mr3020/>]

GPIO Pinout



USB port and monitoring Serial Console via USB-Serial

The USB port on the TL-MR3020 is not compatible with USB1 devices (aka full speed) and only works properly with USB2 (aka high speed) devices. You can however plug a USB-Serial adapter as long as you plug that through a <\$10 USB2. While you're at it, use another USB port to plug in a USB key and write data there (like serial console logs) so as not to wear out the built in flash.

See this page for more tips and how to create a serial console server out of your TL-MR3020: http://marc.merlins.org/perso/linux/post_2012-12-05_Serial-Console-With-WR703N.html [http://marc.merlins.org/perso/linux/post_2012-12-05_Serial-Console-With-WR703N.html]

Boot log

Factory Boot Log

```
U-Boot 1.1.4 (Aug 17 2011 - 09:25:09)

AP121-2MB (ar9330) U-boot

DRAM: 32 MB
led turning on for ls...
id read 0x100000ff
flash size 4194304, sector count = 64
Flash: 4 MB
Using default environment

In:  serial
Out: serial
```

```
Err: serial
Net: ag7240_enet_initialize...
No valid address in Flash. Using fixed address
No valid address in Flash. Using fixed address
: cfg1 0x5 cfg2 0x7114
eth0: 00:03:7f:09:0b:ad
ag7240_phy_setup
eth0 up
: cfg1 0xf cfg2 0x7214
eth1: 00:03:7f:09:0b:ad
athrs26_reg_init_lan
ATHRS26: resetting s26
ATHRS26: s26 reset done
ag7240_phy_setup
eth1 up
eth0, eth1
Autobooting in 1 seconds
## Booting image at 9f020000 ...
   Uncompressing Kernel Image ... OK

Starting kernel ...

Booting AR9330(Hornet)...
Linux version 2.6.31--sDK-9.2.0.312 (root@bogon) (gcc version 4.3.3 (GCC) ) #185 Fri Oct 21 16:26:50 CST 2011
flash_size passed from bootloader = 4
CPU revision is: 00019374 (MIPS 24Kc)
Determined physical RAM map:
  memory: 02000000 @ 00000000 (usable)
User-defined physical RAM map:
  memory: 02000000 @ 00000000 (usable)
Zone PFN ranges:
  Normal    0x00000000 -> 0x00002000
Movable zone start PFN for each node
early_node_map[1] active PFN ranges
  0: 0x00000000 -> 0x00002000
Built 1 zonelists in Zone order, mobility grouping on.  Total pages: 8128
Kernel command line: console=ttyS0,115200 root=31:02 rootfstype=squashfs init=sbin/init mtdparts=ar7240-nor0:128k(u-boot),1024k(kernel),2816(rootfs),64k(config),64k(ART) mem=32M
PID hash table entries: 128 (order: 7, 512 bytes)
Dentry cache hash table entries: 4096 (order: 2, 16384 bytes)
Inode-cache hash table entries: 2048 (order: 1, 8192 bytes)
Primary instruction cache 64kB, VIPT, 4-way, linesize 32 bytes.
Primary data cache 32kB, 4-way, VIPT, cache aliases, linesize 32 bytes
Writing ErrCtl register=00000000
Readback ErrCtl register=00000000
Memory: 29864k/32768k available (1889k kernel code, 2904k reserved, 524k data, 116k init, 0k highmem)
Hierarchical RCU implementation.
NR_IRQS:128
plat_time_init: plat time init done
Calibrating delay loop... 266.24 BogoMIPS (lpj=532480)
Mount-cache hash table entries: 512
NET: Registered protocol family 16
===== ar7240_platform_init: 0

Whoops! This kernel is for product mr3020 v1.0!

bio: create slab <bio-0> at 0
SCSI subsystem initialized
usbcore: registered new interface driver usbfs
usbcore: registered new interface driver hub
usbcore: registered new device driver usb
NET: Registered protocol family 2
IP route cache hash table entries: 1024 (order: 0, 4096 bytes)
TCP established hash table entries: 1024 (order: 1, 8192 bytes)
TCP bind hash table entries: 1024 (order: 0, 4096 bytes)
TCP: Hash tables configured (established 1024 bind 1024)
TCP reno registered
NET: Registered protocol family 1
AR7240 GPIOC major 0
squashfs: version 4.0 (2009/01/31) Phillip Lougher
NTFS driver 2.1.29 [Flags: R/O].
msgmni has been set to 58
alg: No test for lzma (lzma-generic)
alg: No test for stdrng (krng)
io scheduler noop registered
io scheduler anticipatory registered
io scheduler deadline registered
io scheduler cfq registered (default)
Serial: 8250/16550 driver, 1 ports, IRQ sharing disabled
ttyS0: detected caps 00000000 should be 00000100
serial8250.0: ttyS0 at MMIO 0xb8020000 (irq = 19) is a 16550A
console [ttyS0] enabled
PPP generic driver version 2.4.2
NET: Registered protocol family 24
cmdlinepart partition parsing not available
set partition boot
set partition kernel
set partition rootfs
set partition config
set partition art
set partition y
Searching for RedBoot partition table
5 RedBoot partitions found on MTD device ar7240-nor0
Creating 5 MTD partitions on "ar7240-nor0":
0x000000000000-0x0000000020000 : "boot"
0x0000000020000-0x0000000120000 : "kernel"
0x0000000120000-0x00000003e0000 : "rootfs"
0x00000003e0000-0x00000003f0000 : "config"
0x00000003f0000-0x0000000400000 : "art"
->Oops: flash id 0x10215 .
ehci_hcd: USB 2.0 'Enhanced' Host Controller (EHCI) Driver
Port Status 1c000004
ar7240-ehci ar7240-ehci.0: ATH EHCI
ar7240-ehci ar7240-ehci.0: new USB bus registered, assigned bus number 1
ehci_reset Intialize USB CONTROLLER in host mode: 3
ehci_reset Port Status 1c000000
ar7240-ehci ar7240-ehci.0: irq 3, io mem 0x1b000000
ehci_reset Intialize USB CONTROLLER in host mode: 3
ehci_reset Port Status 1c000000
ar7240-ehci ar7240-ehci.0: USB 2.0 started, EHCI 1.00
usb usb1: configuration #1 chosen from 1 choice
hub 1-0:1.0: USB hub found
hub 1-0:1.0: 1 port detected
TCP cubic registered
NET: Registered protocol family 17
802.1Q VLAN Support v1.8 Ben Greear <greearb@candelatech.com>
All bugs added by David S. Miller <davem@redhat.com>
ar7240wdt_init: Registering WDT success
VFS: Mounted root (squashfs filesystem) readonly on device 31:2.
Freeing unused kernel memory: 116k freed
init started: BusyBox v1.01 (2011.04.01-07:49:0000) multi-call binary
```

```
This Board use 2.6.31
xt_time: kernel timezone is -0000
nf_conntrack version 0.5.0 (512 buckets, 5120 max)
ip_tables: (C) 2000-2006 Netfilter Core Team
insmod: cannot open module `/lib/modules/2.6.31/kernel/iptables_raw.ko': No such file or directory
insmod: cannot open module `/lib/modules/2.6.31/kernel/flashid.ko': No such file or directory
PPPoL2TP kernel driver, V1.0
PPTP driver version 0.8.3
insmod: cannot open module `/lib/modules/2.6.31/kernel/harmony.ko': No such file or directory

(none) mips #185 Now flash open!
Fri Oct 21 16:26:50 CST 2011 (none)
(none) login: Now flash open!
ATHR_GMAC: Length per segment 1536
ATHR_GMAC: fifo cfg 3 01f00140
ATHR_GMAC: Mac address for unit 1:bff1f0006
ATHR_GMAC: 6e:09:80:e4:67:1b
ATHR_GMAC: Max segments per packet : 1
ATHR_GMAC: Max tx descriptor count : 40
ATHR_GMAC: Max rx descriptor count : 96
ATHR_GMAC: Mac capability flags : 4D83
ATHR_GMAC: Mac address for unit 0:bff1f0000
ATHR_GMAC: 12:03:cb:60:38:f7
ATHR_GMAC: Max segments per packet : 1
ATHR_GMAC: Max tx descriptor count : 40
ATHR_GMAC: Max rx descriptor count : 252
ATHR_GMAC: Mac capability flags : 4403
athr_gmac_ring_alloc Allocated 640 at 0x81e79800
athr_gmac_ring_alloc Allocated 4032 at 0x81d63000
Setting Drop CRC Errors, Pause Frames and Length Error frames
Setting PHY...mac 0
athr_gmac_ring_alloc Allocated 640 at 0x81e79400
athr_gmac_ring_alloc Allocated 1536 at 0x81f22000
athr_gmac_mii_setup: MDC check failed
Setting Drop CRC Errors, Pause Frames and Length Error frames
ATHRS26: resetting s26
ATHRS26: s26 reset done
Setting PHY...mac 1
device eth0 entered promiscuous mode
Now flash open!
nf_conntrack_rtsp v0.6.21 loading
nf_nat_rtsp v0.6.21 loading
asf: module license 'Proprietary' taints kernel.
Disabling lock debugging due to kernel taint
ath_hal: 0.9.17.1 (AR9380, DEBUG, REGOPS_FUNC, WRITE_EEPROM, 11D)
ath_rate_atheros: Copyright (c) 2001-2005 Atheros Communications, Inc, All Rights Reserved
ath_dev: Copyright (c) 2001-2007 Atheros Communications, Inc, All Rights Reserved
ath_ahb: 9.2.0_U5.508 (Atheros/multi-bss)
Bootstrap clock 25MHz
ar9300RadioAttach: Need analog access recipe!!
Restoring Cal data from Flash
ath_get_caps[4735] rx chainmask mismatch actual 1 sc_chainmak 0
ath_get_caps[4710] tx chainmask mismatch actual 1 sc_chainmak 0
wifi0: Atheros 9380: mem=0xb8100000, irq=2
wlan_vap_create : enter. devhandle=0x80c042c0, opmode=IEEE80211_M_HOSTAP, flags=0x1
wlan_vap_create : exit. devhandle=0x80c042c0, opmode=IEEE80211_M_HOSTAP, flags=0x1.
VAP device ath0 created

DES SSID SET=TP-LINK_POCKET_3020_3ABB7A
ieee80211_scan_unregister_event_handler: Failed to unregister evhandler=c0a048a0 arg=81e9e2c0
wlan_vap_delete : enter. vaphandle=0x81e9c000
wlan_vap_delete : exit. vaphandle=0x81e9c000
wlan_vap_create : enter. devhandle=0x80c042c0, opmode=IEEE80211_M_HOSTAP, flags=0x1
wlan_vap_create : exit. devhandle=0x80c042c0, opmode=IEEE80211_M_HOSTAP, flags=0x1.
VAP device ath0 created

DES SSID SET=TP-LINK_POCKET_3020_3ABB7A
ieee80211_ioctl_siwmode: imr.ifm_active=393856, new mode=3, valid=1
WARNING: Fragmentation with HT mode NOT ALLOWED!!
device ath0 entered promiscuous mode
br0: port 2(ath0) entering forwarding state
ieee80211_ioctl_siwmode: imr.ifm_active=1442432, new mode=3, valid=1
br0: port 2(ath0) entering disabled state

DES SSID SET=TP-LINK_POCKET_3020_3ABB7A
br0: port 2(ath0) entering forwarding state
gpio_tricolor_led_write 699
green_led_onoff = 1

TL-MR3020 mips #185 Fri Oct 21 16:26:50 CST 2011 (none)
TL-MR3020 login:
```

OpenWrt Boot Log and Info

- [dmesg TP-Link TL-MR3020 \[https://gist.github.com/2059480#file_dmesg\]](https://gist.github.com/2059480#file_dmesg)

Link Dump

- [Product web-page : TL-MR3020 \[http://www.tp-link.com/en/products/details/?model=TL-MR3020#fea\]](http://www.tp-link.com/en/products/details/?model=TL-MR3020#fea)
- [The latest official firmware is available here \[http://www.tp-link.com/en/support/download/?model=TL-MR3020\]](http://www.tp-link.com/en/support/download/?model=TL-MR3020)
- [The official GPL code is available here \[http://www.tp-link.com/resources/gpl/150Router.tar\]](http://www.tp-link.com/resources/gpl/150Router.tar).
- [A backup of the whole original SPI flash content is available from here \[http://db.tt/Cp4F1EtX\]](http://db.tt/Cp4F1EtX).
- [Taschenrouter als IPv6-Verteiler \(auf Deutsch\) \[http://www.heise.de/netze/artikel/Taschenrouter-als-IPv6-Verteiler-1440851.html\]](http://www.heise.de/netze/artikel/Taschenrouter-als-IPv6-Verteiler-1440851.html)
- [Interesting webpage with more data about power consumption and so on \[https://apollo.open-resource.org/lab:argus\]](https://apollo.open-resource.org/lab:argus)

Relevant Forum Links

TP-Link TL-MR3020 Support [<https://forum.openwrt.org/viewtopic.php?id=33429>]

Custom IPv6 image for mr3020 (v1.7)

A custom image with ipv6 support: radvd, wide-dhcpv6, 3g stick support, made for RCS-RDS Fiberlink dual stack PPPoE service, but should be okay for static wan settings on other ISPs: <http://www.ip6.ro/firmware/mr3020/> [<http://www.ip6.ro/firmware/mr3020/>]

Tags

2011Dec, FastEthernet, 1NIC, 1WNIC, no switch, 1Ant, USB2.0, 1USB, Serial, integrated, 802.11bgn, AR9331, ath9k, 32RAM, 4Flash, MIPS, MIPS32, 24Kc, AR7241, AP121, portable router

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