Want a Tor Router out of a raspberry pi?! Well here we go!

Hardware

We need the following:

- Raspberry Pi (Modell B, REV1 or REV2) ~40€
- A case for our Pi ~10€
- Transcend Extreme-Speed SDHC 16GB SDCARD ~12€
- Micro-USB 5V 1500mA Power Supply ~4€
- LAN Cable ~1€
- TP-Link TL-WN722N Wireless adapter ~12€
- D-Link DUB-H4 USB HUB ~18€

Makes a total of ~97€ for a ready-to-go Tor Hotspot. (amazon prices!)

Setup

Prepare the SDCard with the latest version of Raspbian.

```
wget -O /tmp/raspbian.img http://downloads.raspberrypi.org/raspbian_latest
dd if=/tmp/raspbian.img of=/dev/<YOUR SDCARD> bs=4M
```

- Plug the SDcard into the Pi
- Connect it with the LAN cable to your router/switch
- Connect the Pi with an HDMI cable to a monitor
- Connect the USB Hub to the Pi.
- On the HUB, connect an USB Keyboard and the Wireless adapter.
- Connect the USB Hub and the Pi to their power supplies and fire it all up.

Config

When raspi-config opens, tell it to expand the filesystem to the full size of your SDcard.
Next, go and enable the SSH daemon. Now you can change the hostname to something like "TorRouter".

Switch to the root user!
`sudo su`
Install Hostapd (does the Hotspot/Access Point) stuff, the DCHP server and Tor.
`apt-get update && apt-get install isc-dhcp-server tor`

For our setup we must compile Hostapd by hand as our TP-Link TL-WN722N uses a driver that's not enabled by the default raspbian hostapd.
`apt-get install libssl-dev libnl-dev`

```
wget http://w1.fi/releases/hostapd-2.0.tar.gz
tar xzvf hostapd-2.0.tar.gz
cd hostapd-2.0/hostapd
cp defconfig .config
nano .config
```

Uncomment the following line

```
#CONFIG_DRIVER_NL80211=y
```

Compile it!

```
make
make install
```

Edit dhcpd.conf

```
nano /etc/dhcp/dhcpd.conf
```

Comment the following lines out

```
# option domain-name "example.org";
# option domain-name-servers ns1.example.org, ns2.example.org;
```

Uncomment the following line

```
# authoritative;
```

Now add the following block of lines to the config (at the end of the file)

```
subnet 192.168.42.0 netmask 255.255.255.0 {
range 192.168.42.10 192.168.42.50;
option broadcast-address 192.168.42.255;
option routers 192.168.42.1;
default-lease-time 600;
max-lease-time 7200;
option domain-name "local";
option domain-name-servers 8.8.8.8, 8.8.8.4;
}
```

Edit /etc/default/isc-dhcp-server

```
nano /etc/default/isc-dhcp-server
```

Change the INTERFACES value to this

```
INTERFACES=wlan0
```

Now open /etc/network/interfaces and edit it to the following lines

```
iface lo inet loopback
iface eth0 inet dhcp

allow-hotplug wlan0
#iface wlan0 inet manual
#wpa-roam /etc/wpa_supplicant/wpa_upplicant.conf
#iface default inet dhcp

iface wlan0 inet static
address 192.168.42.1 netmask 255.255.255.0
```

Enable wlan0

```
ifup wlan0
```

Now we create /etc/hostapd/hostapd.conf
`nano /etc/hostapd/hostapd.conf`
Fill it with the following lines

```
interface=wlan0
driver=nl80211
ssid=TorRouter
hw_mode=g
channel=6
macaddr_acl=0
auth_algs=1
ignore_broadcast_ssid=0
wpa=2
wpa_passphrase=YOURSECRETPASSWORDGOESHERE
wpa_key_mgmt=WPA-PSK
wpa_pairwise=TKIP
rsn_pairwise=CCMP
```

Enable DAEMON mode in hostapd.
`nano /etc/default/hostapd`
Edit it
`DAEMON_CONF="/etc/hostapd/hostapd.conf"`

Now we need to download some more firmware for the chipset on our TP-Link
`wget -O /etc/driver/htc_9271.fw`
http://wireless.kernel.org/download/htc_fw/1.3/htc_9271.fw
Go ahead and start the 2 services!
```
service hostapd start
service isc-dhcp-server start
```
Enable autostart
```
update-rc.d hostapd enable
update-rc.d isc-dhcp-server enable
```
Add the following line to /etc/sysctl.conf
`net.ipv4.ip_forward=1`
Activate the changement
`sysctl -p`
Delete any old IPtables rule (if any)
```
iptables -F
iptables -t nat -F
```
Add the following ip-forwarding rules

```
iptables -t nat -A PREROUTING -i wlan0 -p tcp –dport 22 -j REDIRECT –to-ports
22
iptables -t nat -A PREROUTING -i wlan0 -p udp –dport 53 -j REDIRECT –to-ports
53
iptables -t nat -A PREROUTING -i wlan0 -p tcp –syn -j REDIRECT –to-ports 9040
iptables-save > /etc/iptables.ipv4.nat
```

Add the following line to /etc/network/interfaces but after a newline.
`up iptables-restore /etc/iptables.ipv4.nat`

Config Tor! Add the following lines after this line ##
https://www.torproject.org/docs/faq#torrc

```
Log notice file /var/log/tor/notices.log
VirtualAddrNetwork 10.192.0.0/10
AutomapHostsSuffixes .onion, .exit
AutomapHostsOnResolve 1
TransPort 9040
TransListenAddress 192.168.42.1
DNSPort 53
DNSListenAddress 192.168.42.1
```

Start Tor
```
service tor start
```

Enable Tor in autostart
```
update-rc.d tor enable
```

Now your Hotspot is ready to be used!
Go ahead and connect to it. Then go to https://check.torproject.org. It will tell you what you are using Tor!
Have fun with it!

Buyable solutions

If you want to buy a package with everything you need then have a look at Adafruit. But you still need do configure everything by your own! Costs: $94.95