Tox Bootstrap Node on Debian

*These steps have been tested on **Debian 11***

References:

- https://wiki.tox.chat/users/runningnodes
- https://github.com/TokTok/c-toxcore/tree/master/other/bootstrap_daemon

Install Dependencies:

- `git` (to clone the repo)
- `libc6` (includes `libm`, `libthread`, `librt`)
- `libconfig`
- `cmake`
- `libnacl` (might not be necessary if `libsodium` is installed?)
- `libsodium` (I still had to install this, even with `libnacl` installed...)

```
sudo apt update
sudo apt install git libc6-dev cmake libconfig-dev libnacl-dev libsodium-dev
```

Clone latest Git repository & submodules:

- GitHub: TokTok/c-toxcore

In your home directory or wherever you prefer to do compilation work:

```
git clone https://github.com/TokTok/c-toxcore.git
cd c-toxcore
git submodule update --init
```

Compile `libtoxcore` and `tox-bootstrapd`:

In the `c-toxcore` directory (you might be in it from the previous step):

```
mkdir _build
cd _build
cmake ..
make
make install
```

Did it Compile OK?

Verify the output text from `make` is all `green` and `tox-bootstrapd` was built:

```
[100%] Linking C executable tox-bootstrapd
[100%] Built target tox-bootstrapd
```

Create a `tox-bootstrapd` User & Restricted Home Directory:

```
sudo useradd --home-dir /var/lib/tox-bootstrapd --create-home --system --shell /sbin/nologin
--comment "Account to run Tox's DHT bootstrap daemon" --user-group tox-bootstrapd
sudo chmod 700 /var/lib/tox-bootstrapd
```

Service & Configuration Files:

In the `c-toxcore` directory (`cd ..` if you're still in `_build`), copy the service and conf files to the system locations. Keep in mind there is a directory structure under `c-toxcore` that is similar to the structure under `_build`, but the **service** and **conf** files are found under `c-toxcore/other/bootstrap_daemon/` and the **executable** is found under `c-toxcore/_build/other/bootstrap_daemon/`.

Copy the **service file** to `/etc/systemd/system/`:

```
sudo cp other/bootstrap_daemon/tox-bootstrapd.service /etc/systemd/system/
```

If you will be using the default port number or a number greater than `1023`, you can **_simply copy the service file and leave it as it is_**. Otherwise, you will need to un-comment the line `#CapabilityBoundingSet=CAP_NET_BIND_SERVICE`.

Copy the **configuration file** to `/etc/`:

```
sudo cp other/bootstrap_daemon/tox-bootstrapd.conf /etc/tox-bootstrapd.conf
```

Customize Configuration Settings:

Use `nano` or your favorite editor to edit `/etc/tox-bootstrapd.conf`:

```
sudo nano /etc/tox-bootstrapd.conf
```

At a minimum, edit your Message of the Day (**MOTD**), other **bootstrap nodes**, and probably also
your **ports**. A current list of public bootstrap nodes is displayed at https://nodes.tox.chat/.

```
port = 33445

keys_file_path = "/var/lib/tox-bootstrapd/keys"

pid_file_path = "/var/run/tox-bootstrapd/tox-bootstrapd.pid"

enable_ipv6 = true

enable_ipv4_fallback = true

enable_lan_discovery = true

enable_tcp_relay = true

tcp_relay_ports = [443, 3389, 33445, 43334]

enable_motd = true

motd = "Write Your Custom MOTD Here! (up to 255 chars)"

bootstrap_nodes = (
  { // Tony (he's awesome)
    address = "tox.abilinski.com"
    port = 33445
    public_key = "10C00EB250C3233E343E2AEBA07115A5C28920E9C8D29492F6D00B29049EDC7E"
  },
  { // Cody (he's awesome too)
    address = "198.199.98.108"
    port = 33445
    public_key = "BEF0CFB37AF874BD17B9A8F9FE64C75521DB95A37D33C5BDB00E9CF58659C04F"
  },
  { // Gabe (he's just a geek)
    address = "104.225.141.59"
    port = 43334
    public_key = "933BA20B2E258B4C0D475B6DECE90C7E827FE83EFA9655414E7841251B19A72C"
```

```
    }
)
```

Install the `tox-bootstrapd` Executable:

Copy the tox-bootstrapd executable from `_build/other/bootstrap_daemon/` to `/usr/local/bin/`:

```
sudo cp _build/other/bootstrap_daemon/tox-bootstrapd /usr/local/bin/tox-bootstrapd
```

Enable & Start the `systemd` Service:

```
sudo systemctl daemon-reload
sudo systemctl enable tox-bootstrapd.service
sudo systemctl start tox-bootstrapd.service
sudo systemctl status tox-bootstrapd.service
```

Did the Service Start OK?

If `systemctl start` didn't produce any text and `systemctl status` shows active (running), then you should be up and running!

Otherwise, scroll down/right (arrow keys) through the output text under `systemctl status` or try some of these helpful troubleshooting tips.

You can see a list of services that are listening on ports with:

```
sudo netstat -tunlp
```

Bootstrap Node Public Key:

Your public key should be listed near the bottom of the log entries:

```
sudo grep "tox-bootstrapd" /var/log/syslog
```

Enable External Ports:

You may need to open ports listed in `/etc/tox-bootstrapd.conf`:

```
sudo ufw allow 33445
sudo ufw allow 443/tcp
sudo ufw allow 3389/tcp
```

If you're not using `ufw`, you probably should be:

```
sudo apt update
sudo apt install ufw
sudo ufw allow ssh
sudo ufw enable
```

You can limit a port to a specific network interface (e.g. your VPN tunnel) using:

```
sudo ufw allow in on <interface> to any port <number>
```

Test your Bootstrap Node:

You can test outside connectivity to your node here:

https://nodes.tox.chat/test

Nginx Reverse Proxy:

In case this is useful, here's some information on configuring nginx as a reverse UDP & TCP proxy:

https://wilsons.life/bookstack/books/server-provisioning/page/nginx-reverse-udp-tcp-proxy

That's all! Feel free to send me a message via Tox at:

```
CD9E37503A5B2DFB41947B9A0E4B921381340B49FC318FEB07250789C715DA3470885905869F
```

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