

Advanced usage

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Installing the timelord on Debian / Ubuntu

1. To run a timelord, you need a synchronized BPX Chain full node. If you don't have it already, [follow the steps of this tutorial first](#).

2. The timelord software is not included in official binary .deb / .rpm releases. You have to build it from the source code. Login as root and install the git client first.

```
apt-get install git
```

3. The timelord installer script requires root access to install some dependencies from APT repositories. Add BPX services user to sudoers by the following command:

```
usermod -a -G sudo bpxv3
```

4. Now it's time to switch to BPX services user:

```
su - bpxv3
```

4. Fetch the source code of the latest Beacon Client release:

```
git clone https://github.com/bpx-network/bpx-beacon-client
```

5. Install the Beacon Client from the source. This may take several minutes.

```
cd bpx-beacon-client  
. install.sh
```

6. Install the timelord software:

```
. install-timelord.sh
```

7. Press **Control + D** to log out and return to the root console.

8. Create the timelord service descriptor file:

```
nano /etc/systemd/system/bpx-timelord.service
```

Insert the following file content:

```
[Unit]
Description=BPX Timelord

[Service]
Type=forking
User=bpxv3
WorkingDirectory=/home/bpxv3/bpx-beacon-client
ExecStart=bash -c ". activate && bpx start timelord-launcher-only timelord-only"
ExecStop=bash -c ". activate && bpx stop timelord-only timelord-launcher-only"
Restart=always

[Install]
WantedBy=multi-user.target
```

Save the file by pressing **Control + O** and close the editor with **Control + X**.

9. Refresh startup services configuration

```
systemctl daemon-reload
```

10. Activate automatic startup of timelord service

```
systemctl enable bpx-timelord
```

Regular timelord

If you want to run a regular timelord used by BPX consensus algorithm for generating new blocks, just start the timelord with default configuration:

```
systemctl start bpx-timelord
```

Bluebox timelord

To run the bluebox timelord which compresses old blocks in the chain, you need to edit the configuration file:

```
nano /home/bpxv3/.bpx/beacon/config/config.yaml
```

- In the timelord section, set `bluebox_mode` to `True`
- In the beacon section, set `send_uncompact_interval` to recommended value of `300`

Save the file and exit. Then start the timelord:

```
systemctl start bpx-timelord
```

How to set up private RPC server on Debian / Ubuntu

1. Set up and sync your BPX Chain full node [following this guide](#). When creating the execution client systemd service, add some new parameters to the geth command line:

```
ExecStart=bpx-geth --syncmode snap --http --http.api web3,eth,net --http.corsdomain "*" 
```

- `--http.api web3,eth,net` makes only safe APIs available to the public: `web3`, `eth` and `net`, meanwhile it blocks access to dangerous RPC methods, e.g. `admin` or `personal`
- `--http.corsdomain "*"` allows your RPC endpoint to be used in dApps in all domains

If you want your RPC endpoint to provide archive data also, replace the mentioned line to the following one:

```
ExecStart=bpx-geth --syncmode full --gcmode archive --http --http.api web3,eth,net --http.corsdomain "*" 
```

2. Create an A record in your domain DNS zone and point it to your BPX full node IP address.

BPX developers recommendation: all private RPC endpoints should be named `bpx-dataseed`, so if your domain is `yourdomain.com`, please name your RPC server `bpx-dataseed.yourdomain.com`.

3. Install nginx HTTP server and certbot:

```
apt-get install nginx python3-certbot-nginx
```

4. Configure nginx as a reverse proxy for Geth:

```
nano /etc/nginx/sites-available/bpx-dataseed.yourdomain.com
```

```
upstream geth {
    least_conn;
    server 127.0.0.1:8545;
}
```

```
server {
    server_name bpx-dataseed.yourdomain.com;

    location / {
        proxy_pass http://geth;
    }
}
```

Save file and exit.

5. Enable site and restart nginx:

```
ln -s /etc/nginx/sites-available/bpx-dataseed.yourdomain.com /etc/nginx/sites-enabled/bpx-
dataseed.yourdomain.com
systemctl restart nginx
```

6. Obtain a free SSL certificate from Letsencrypt to enable HTTPS:

```
certbot --nginx -d bpx-dataseed.yourdomain.com
```

During the certbot wizard, provide your e-mail address for notifications related to the certificate, then select the option to redirect all HTTP traffic to HTTPS.

7. Done. Test your RPC endpoint by adding `https://bpx-dataseed.yourdomain.com` instead of the public RPC address in your wallet, e.g. Metamask. Let the BPX developers know that you host your own RPC endpoint. If it works stably for a few months, we will post information about it on our website and social media.