

# PTP (Precision Time Protocol)

- 
- 
- `timemaster`
  - `(ptp_domain)`
  - `ntp`
  - `timemaster`
- `ptp4l`
- `phc2sys`
- 



:

- Astra Linux Common Edition 2.12.10



Astra Linux Common Edition :

- NTP (`ntpd`) ( `ntp ntpdate`);
- OpenNTP (`openntpd`) ( `openntp`);
- `timedatectl / systemd-timesyncd.service`.

.. , .

Astra Linux Common Edition 2.12.10 `linuxptp` :

- `ptp4l` - , [PTP \(Precision Time Protocol\)](#) [IEEE 1588](#). , [IEEE 1588](#). , , , 1-100 . ;
- `phc2sys` - ;
- `timemaster` - , `ntp` `ptp`.



`ntp` PTP `timedatectl`.

.. ( ).  
.. .

, `ethtool` `ethtool` ( `ethtool` , ):

```
sudo apt install ethtool
sudo ethtool -T eth0
```

, :

```
$ sudo ethtool -T eth0
Time stamping parameters for eth0:
Capabilities:
hardware-transmit (SOF_TIMESTAMPING_TX_HARDWARE)
software-transmit (SOF_TIMESTAMPING_TX_SOFTWARE)
hardware-receive (SOF_TIMESTAMPING_RX_HARDWARE)
software-receive (SOF_TIMESTAMPING_RX_SOFTWARE)
software-system-clock (SOF_TIMESTAMPING_SOFTWARE)
hardware-raw-clock (SOF_TIMESTAMPING_RAW_HARDWARE)
PTP Hardware Clock: 0
Hardware Transmit Timestamp Modes:
off (HWTSTAMP_TX_OFF)
on (HWTSTAMP_TX_ON)
Hardware Receive Filter Modes:
none (HWTSTAMP_FILTER_NONE)
all (HWTSTAMP_FILTER_ALL)
ptpv1-l4-sync (HWTSTAMP_FILTER_PTP_V1_L4_SYNC)
ptpv1-l4-delay-req (HWTSTAMP_FILTER_PTP_V1_L4_DELAY_REQ)
ptpv2-l4-sync (HWTSTAMP_FILTER_PTP_V2_L4_SYNC)
ptpv2-l4-delay-req (HWTSTAMP_FILTER_PTP_V2_L4_DELAY_REQ)
ptpv2-l2-sync (HWTSTAMP_FILTER_PTP_V2_L2_SYNC)
ptpv2-l2-delay-req (HWTSTAMP_FILTER_PTP_V2_L2_DELAY_REQ)
ptpv2-event (HWTSTAMP_FILTER_PTP_V2_EVENT)
ptpv2-sync (HWTSTAMP_FILTER_PTP_V2_SYNC)
ptpv2-delay-req (HWTSTAMP_FILTER_PTP_V2_DELAY_REQ)
```

linuxptp Astra Linux Common Edition 2.12.10 (. synaptic) :

```
sudo apt install linuxptp
```

## timemaster

timemaster /etc/linuxptp/timemaster.conf.  
:

```
man timemaster
```

### (ptp\_domain)


ptp4l /etc/linuxptp/timemaster.conf [ptp\_domain 0] ( - , eth0):

 [ptp\_domain 0]  
interfaces eth0  
delay 10e-6

ptp4l, .

## ntp

ntp /etc/linuxptp/timemaster.conf [timemaster] ntpd cronyd:

 [timemaster]  
~~ntp\_program chronyd~~  
ntp\_program ntpd

timemaster ntpd , ntpd :

```
sudo systemctl mask ntp
```

## timemaster

timemaster :

```
sudo systemctl enable timemaster
```

## ptp4l

ptp4l , (time stamping).

ptp4l /etc/linuxptp/ptp4l.conf, :

```
man pdp4l
```

, ptp4l (/etc/linuxptp/ptp4l.conf) :

 time\_stamping hardware  
time\_stamping software

# phc2sys

phc2sys , RTC ( ), phc2sys . , phc2sys .

```
sudo systemctl start timemaster
```

timemaster , :

```
$ systemctl status timemaster
timemaster.service - Synchronize system clock to NTP and PTP time sources
Loaded: loaded (/lib/systemd/system/timemaster.service; disabled; vendor preset: enabled)
Active: active (running) since Mon 2019-04-22 15:51:02 MSK; 2s ago
Docs: man:timemaster
Main PID: 2508 (timemaster)
Tasks: 5 (limit: 4608)
CGroup: /system.slice/timemaster.service
2508 /usr/sbin/timemaster -f /etc/linuxptp/timemaster.conf
2509 /usr/sbin/ntpd -u ntp:ntp -g -n -c /var/run/timemaster/ntp.conf
2510 /usr/sbin/ptp4l -l 5 -f /var/run/timemaster/ptp4l.0.conf -H -i eth0
2511 /usr/sbin/phc2sys -l 5 -a -r -R 1.00 -z /var/run/timemaster/ptp4l.0.socket -n 0 -E ntpshm -M 0
.....
```