

**Paket CHRONY - Network Time Protocol
Server/Client
Version 4.0.0-testing-x86_64-r60780**

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1. Documentation of the CHRONY package

1.1. CHRONY - Network Time Protocol Server/Client

OPT_CHRONY extends fli4l with the [Network Time Protocol](#) (Page 4) (NTP). Don't mix it up with the *normal* Time Protocol, the old OPT_TIME provides. The protocols aren't compatible which possibly raises the need of new client-side programs, which understand NTP. If you can't abandon the simple time protocol, chrony can provide it as well. OPT_CHRONY works both as a server and client. Working as a client, OPT_CHRONY adjusts the time of the fli4l according to time references (time servers) in the internet. The basic setting uses up to three time servers from [pool.ntp.org](#) (Page 4). However it's possible to use a different selection of time servers in the configuration file. Thus it's possible to use time servers near you, if you choose [de.pool.ntp.org](#) if the router or your provider sits in Germany. For more details, look at the website of [pool.ntp.org](#) (Page 4).

Working as a client, OPT_CHRONY acts as a time reference for the local network (LAN). NTP uses port 123.

Chrony doesn't need a permanent connection to the internet. When the connection drops, chrony gets a notice and ceases the adjustment with the internet time servers. Neither does chrony dial to raise the connection nor prevent the automatic hangup, if HUP_TIMEOUT, the duration where no data is routed to the internet, is reached.

In order to do time adjustments smoothly, the following should be in mind:

- Chrony expects the BIOS-clock to be in UTC timezone.
UTC = German time minus 1 (winter) or 2 (summer) hour(s)
- Since version 2.1.12 chrony sets the time during the first connection to the internet correct even if the time difference is huge (caused by an empty mainboard battery for example).
- If the BIOS isn't capable of handling years after 1999 (Year 2000 Bug) or if the BIOS clock is faulty, activate OPT_Y2K='yes' (Page ??)!

Only time servers in the internet which are reachable by the default route (0.0.0.0/0) can be used, because only the default route changes chrony into online mode. As an ethernet router with no DSL or ISDN circuits configured, chrony acts permanently in online mode.

Disclaimer: *The author gives neither a guarantee of functionality nor is he liable for any damage or the loss of data when using OPT_CHRONY.*

1.1.1. Configuration of OPT_CHRONY

The configuration is made, as for all fli4l packages, by adjusting the file `path/fli4l-4.0.0-testing-x86_64-r60780/<config>/chrony.txt` to meet the own demands. However almost all variables of OPT_CHRONY are optional. Optional means, the variables could, but need not be in the config file. Thus the chrony config file is almost empty and all

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optional variables have a usefull setting by default. To use different settings, the variables must be inserted into the config file by hand. Furthermore the description of every variable follows:

OPT_CHRONY Default: `OPT_CHRONY='no'`

The setting 'no' deactivates OPT_CHRONY completely. There will be no changes made on the fli4l boot medium or the archive `opt.img`. Further OPT_CHRONY basically does not overwrite other parts of the fli4l installation with one exception. The paket filter file which is responsible for not counting the traffic coming from the outside (to make sure fli4l will drop the line for sure, when reaching the hangup time), will be exchanged. The new paket filter file ensures, that chrony-traffic doesn't count for the hangup time. To activate OPT_CHRONY, the variable OPT_CHRONY has to be set to 'yes'.

CHRONY_TIMESERVICE Default: `CHRONY_TIMESERVICE='no'`

With CHRONY_TIMESERVICE an additional protocol to transfer time informations can be invoked. It's only neccesary when the local hosts can't deal with NTP. It is conform to RFC 868 and uses port 37. If possible, prefer NTP.

Many thanks to Christoph Schulz, who provided the program `srv868`.

CHRONY_TIMESERVER_N Default: `CHRONY_TIMESERVER_N='3'`

CHRONY_TIMESERVER_N sets the number of reference time servers chrony uses. Add the same number of CHRONY_TIMESERVER_x variables. The index x must be increased up to the total number.

The basic setting uses up to three time servers from pool.ntp.org (Page 4).

CHRONY_TIMESERVER_x Default: `CHRONY_TIMESERVER_x='pool.ntp.org'`

With CHRONY_TIMESERVER_x an own list of internet time servers can be made. Either IP or DNS hostnames are possible.

CHRONY_LOG Default: `CHRONY_LOG='/var/log/chrony'`

CHRONY_LOG is the folder where chrony stores NTP measurements and information about applied time adjustments.

1.1.2. Support

Support is only given in the [fli4l Newsgroups](#) (Page 4).

1.1.3. Literature

Homepage of chrony: <http://chrony.tuxfamily.org/>

NTP: The Network Time Protocol: <http://www.ntp.org/>

pool.ntp.org: public ntp time server for everyone: <http://www.pool.ntp.org/en/>

RFC 1305 - Network Time Protocol (Version 3) Specification, Implementation:

<http://www.faqs.org/rfcs/rfc1305.html>

fli4l Newsgroups and the rules: <http://www.fli4l.de/hilfe/newsgruppen/>

A. Appendix of the CHRONY package

A.1. CHRONY - Inform other applications about timewarps

If chrony notes that the clock is significantly away from the current time, it corrects the time in one great step and starts scripts to inform other applications about this timewarp. For example to inform imond about a timewarp, chrony does the following:

1. include scripts into the archive

Chrony includes two files to the archive:

```
imond yes etc/chrony.d/timewarp.sh mode=555 flags=sh
imond yes etc/chrony.d/timewarp100.imond mode=555 flags=sh
```

timewarp.sh starts all scripts in the same folder which names are timewarp<3 numbers>.<name>.

2. provide script

chrony includes the following script into the archive:

```
# inform imond about time warp
imond-stat "adjust-time $timewarp 1"
```

Hence imond will be informed about the timewarp and is able to correct it's internal timebase.

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