

# Bootloader Version 3 / 4

Up to now, all Netzers supplied had the Bootloader in version 2.

This Bootloader accepted intel hex files via TFTP standard.

Instead of intel hex files, the new versions of the Bootloader expects (encoded) binary files with a proprietary structure. Those Bootloader are particularly for professional use. Bootloader 3 is used for firmware release 1.4, Bootloader 4 is used for release 1.5.

It is not simply possible to create and copy own images for those Bootloader versions.

The Bootloader may be also provided with any other password for own images. For the know-how and the tools required simply contact [me](#).

From the outside, a Netzer with new Bootloader version is recognizable by the **left** LED blinking at the network socket.

## Advantages

- Not not any image may be flashed up, the used key must match.
- The images can not be easily disassembled.
- The readprotection of the controller is activated.
- The code was further optimized and has a smaller size of 6K.
- Plausibility and CRC check of flashed image.

## Advantages Bootloader 4

- Independent data chunks can be flashed at different times (with different start addresses).
- Gently usage of the flash memory: Only the flash areas are erased where new data is written to.
- Dedicated functions of the bootloader can be used from a flashed application, which may save space.

## Update

If a [license](#) for the pro-version has been acquired, an update from Bootloader 2 to version 3 is first of all required. The update is sent as an intel hex file via e-mail. Each update is signed with the

MAC-address of the target Netzer. When acquiring the license, stating the MAC-address of the Netzer is required.

The most important thing at first: In general, Boot updates function on all Netzers of this world. But the version 1.4 can be exclusively installed on the Netzer with the stated MAC-address later! Hence, please apply the correct boot update only for the correct Netzer. During the flashing process, please do not switch the Netzer off!

The Boot update using TFTP according to this [instructions](#) is copied. After successful flashing, the Netzer should start up again and the LEDs of the network socket should blink alternately. This is the flashing process of the update. After that, the Netzer restarts automatically, the new Bootloader version is installed! It is recognizable that the left LED instead of the right one is blinking in the Bootloader mode now.

## Updates during operation

The update is carried out by means of a PC via the network. The hex file to be loaded is previously filed on the hard disk. The file is transferred to Netzer via TFTP-protocol. The update requires a TFTP-client. Most operating systems included such a client as a standard.

Since version 1.3, the firmware update is required to be explicitly activated via the Netzer web interface (logged in as the administrator). This closes a potential security hole of the Netzer. For this, there is a radio button in the general settings:



After that, the file is transferred to Netzer by TFTP PUT-instruction. Netzer is activated via the IP-address or the network name. Under Windows, a TFTP call of the command line for example looks as follows:

```
tftp -i ne7C4000.local put "Netzer.bin"
```

The **-i** switches the binary mode on, since Bootloader 3 accepts binary files only.

Netzer is automatically set in update mode and transferred in the file. A running transfer is recognizable by the network activity LED, lighting up for about ten to twenty seconds. At the end, the tftp-client displays a message similar to the following one:

```
Transfer successful: 335139 bytes in 16 seconds, 20946 bytes/s
```

# Updates in Bootloader mode

For about two seconds, the Bootloader mode is active directly after plug-in of the power supply. It is recognizable by the fastly blinking left LED. In Bootloader mode, Netzer always has a fix, not changeable IP-address 192.168.97.60 as well as MAC-address 00-04-A3-00-00-00.

Netzer supports only ARP and TFTP in Bootloader mode, no ICMP. Hence, Netzer can **not** be pinged at 192.168.97.60.

It is important that the IP is not occupied by another device in the network. The update process is analog to the first variant.

If the update is started, only one Netzer must be in the network and in the Bootloader mode!

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