TFTP Firmware upgrade

Application Note 301

Revision 4, July 2023

This Application Note describes how to upgrade the firmware of your *proconX* unit using the TFTP method.

Prerequisites

- File transfer utility (Tftpd64.exe, version v4.64)
- Firmware binary file (*.bin* extension)

The Tftpd64 utility is available from the *proconX* website or from https://pjo2.github.io/tftpd64/

Preparation

1. Unzip the Tftpd64.zip file into a directory.

2. The firmware binary file is usually distributed as *.zip* file. Unzip it into the same directory where you have placed the Tftpd64.exe utility.

3. Establish an Ethernet network connection between the *proconX* unit and a Windows PC. The *proconX* unit and the Windows PC must be on the same subnet.


Office network

PC with Tftpd32

Gateway
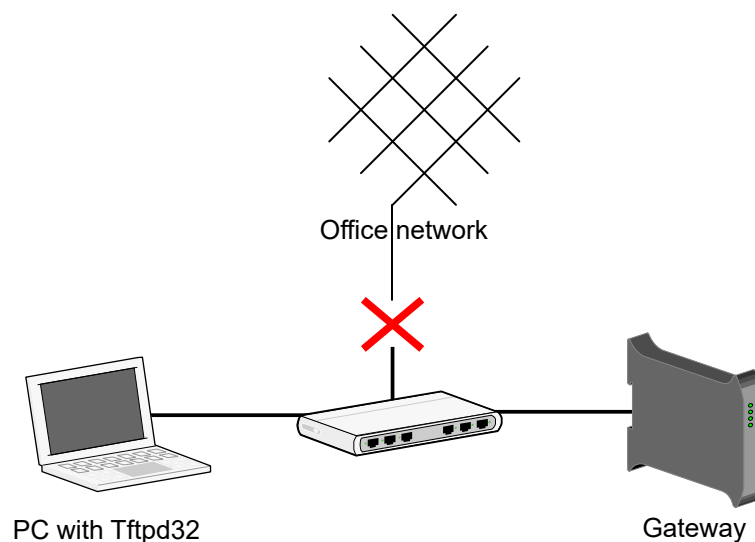
Make sure that there is no DHCP or BOOTP server connected to the network. If in doubt, disconnect both, PC and *proconX* unit from the network and use a separate switch which is isolated from the rest of the network to connect them.
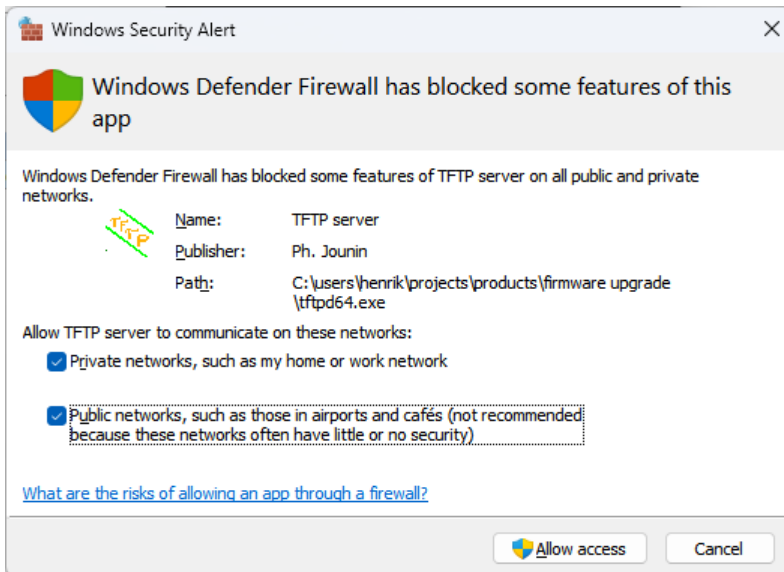
PC firewall software tends to block the TFTP and DHCP traffic. It may be easier to temporarily turn off the firewall rather to re-configure the firewall.

Configuring the file transfer utility

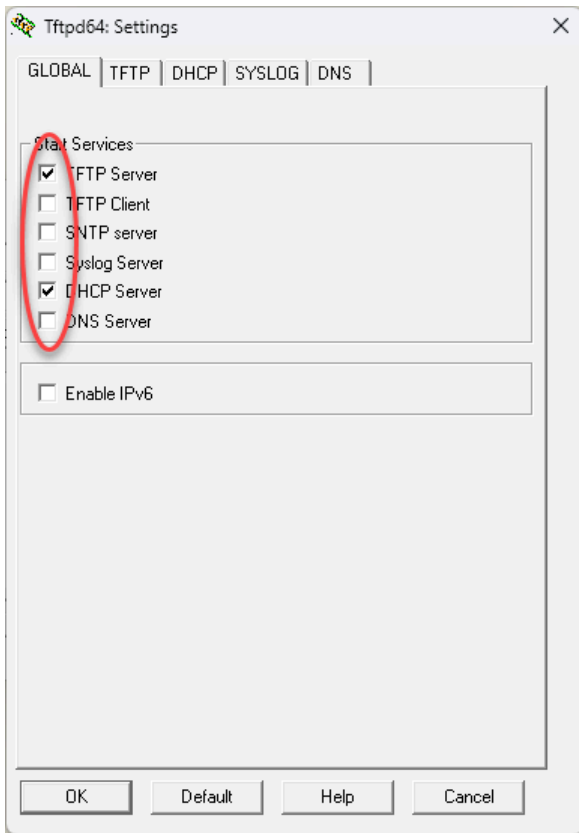1. Launch Tftpd64.exe from the directory you unzipped it to:
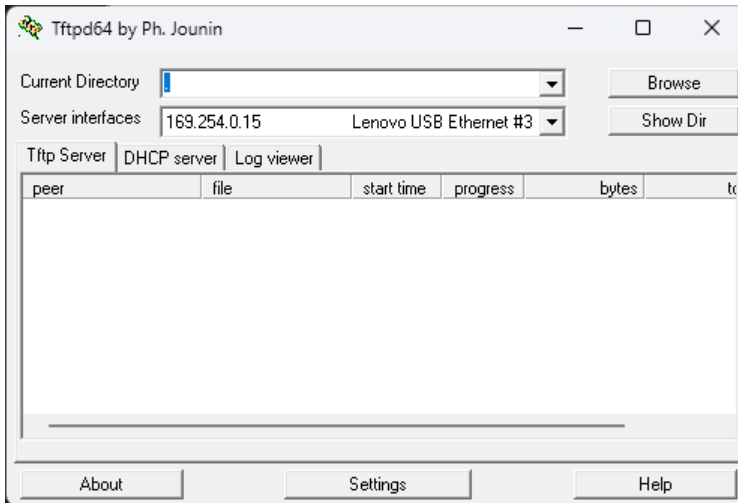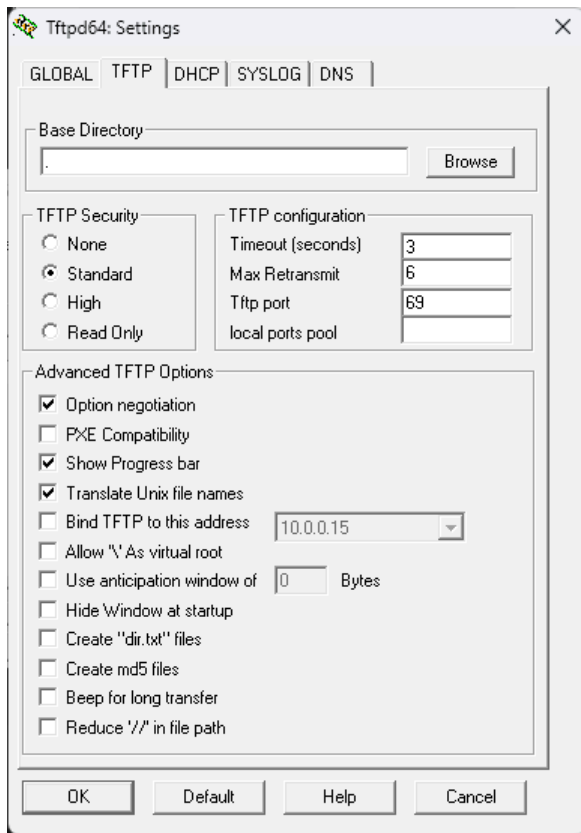

Configure your firewall to unblock Tftpd64:

1. Click on the **Settings** button to configure the Tftpd64 utility. Then select the **GLOBAL** tab.

   Uncheck all but the TFTP Server and DHCP Server components.

2. Select the **TFTP** tab. The settings used are the default settings and should match those shown below:

3. Select the **DHCP** tab and enter the following settings:
   - Choose an IP address for the *proconX* unit and enter it in the `IP pool starting address` field. This IP address must be of the same subnet as your computer and not assigned to another network node. In most cases this means that the first three numbers of the IP addresses must be identical. Your computer's IP address is shown in the `Bind DHCP to this addess` field.
   - Enter **1** as value for the pool size.
   - Change `Lease` to **3** minutes.
   - Enter the name of the binary file to be uploaded in the `Boot File` field. This file must have a *.bin* extension.
   - Enter the netmask of the subnet in the `Mask` field. In most cases this is *255.255.0.0*.
   - Add **200** as `Additional Option` and enter the hardware Type as shown on the serial number label. This should be either *X100-STD* or *X100-CAN* if you have a hardware with CAN bus.
   - Uncheck `Ping address before assignation`.
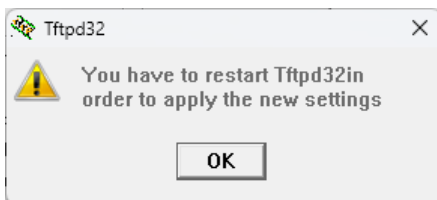   - Uncheck `Persistent leases`.
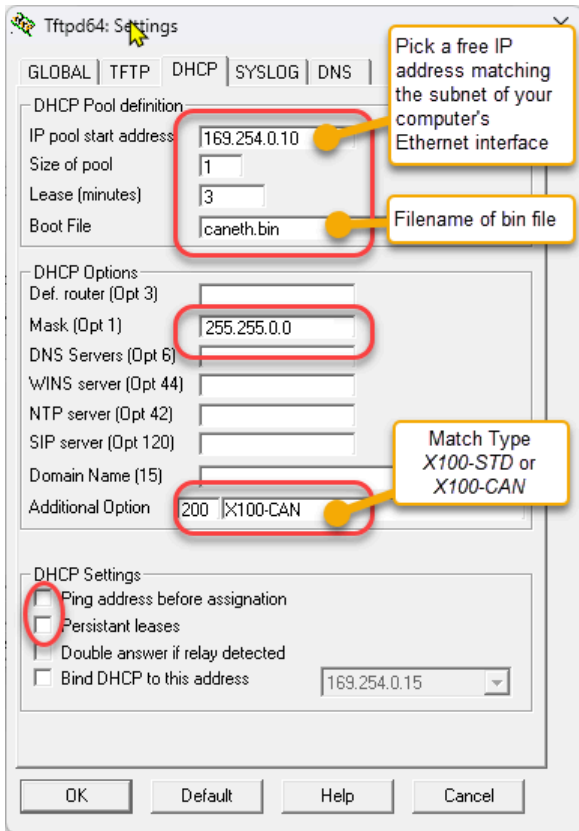
4. Click on the OK button to store these settings.

   A warning "Gateway is empty" will appear which shall be ignored.
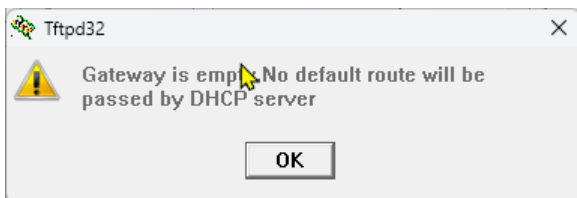
   A dialog box will inform that Tftpd64 has to be restarted. Confirm and restart the program.


Upload process

1. Restart Tftpd64.exe after the settings have been configured.

2. Power-cycle the *proconX* unit.

3. Upon restart the *proconX* unit will contact Tftpd64 to obtain an IP address and check if a boot file is available. If the TFTP server offers a file for download, the *proconX* unit will load this file and program it into it's flash memory.

   This is indicated for a brief moment through a file transfer progress bar.
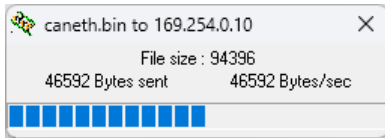
   Once the boot file has been sent to the *proconX* unit, it will start the newly loaded firmware.

4. The `Log View` tab window should show a log similar to the one below:

```
Rcvd DHCP Discover Msg for IP 0.0.0.0, Mac 72:03:48:67:74:D2 [06/07 14:59:56.983]
DHCP: proposed address 169.254.0.10 [06/07 14:59:56.984]
Rcvd DHCP Rqst Msg for IP 0.0.0.0, Mac 72:03:48:67:74:D2 [06/07 14:59:56.990]
Previously allocated address 169.254.0.10 acked [06/07 14:59:56.990]
Connection received from 169.254.0.10 on port 1024 [06/07 14:59:56.992]
Read request for file <caneth.bin>. Mode octet [06/07 14:59:56.992]
Using local port 53480 [06/07 14:59:56.993]
<caneth.bin>: sent 171 blks, 87332 bytes in 4 s. 0 blk resent [06/07 15:00:00.373]
```

5. The last line in the log must be a confirmation of the uploaded file name and it's size.

6. Connect to the *proconX* unit using a web browser and click on the `About` menu entry to confirm the new firmware version number.

7. In case of any failure, repeat above process starting with step 2.

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