Getting started with Linux Runtime

straton user guide – Rev. 11

CP_R31_006_H

straton

straton

Content

1. Installation of straton

1.1. Download and install straton Editor

Download and install the straton Editor from https://straton-plc.com/en/downloads/

1.2. Download and install the T5 runtime

Download the straton runtime from https://straton-plc.com/en/downloads/

IMPORTANT: the runtime's version must fit to your processor (ARM, x86…). The runtimes available on the website have been built for **demo** purposes only. Thus, STRATON AUTOMATION cannot guarantee that this demo runtime will work on your target. Some of the already tested configurations are listed in the part 2 of this document.

Copy the t5runtime to the Linux device. Connect to the device and set the rights to the runtime:

▸   `chmod +x t5runtime`

Start it by typing the following command:

▸   `sudo ./t5runtime`

From version 11, an additional bash file named **run.sh** is provided. This helper can assist the user to select the appropriate command line arguments.

Grant rights to the file using "`chmod +x run.sh`"

Launch "`sudo ./run.sh --help`" to display information about the arguments

Launch "`sudo ./run.sh`" to start t5runtime with the optimal command line arguments.

By default the runtime's port number is 1100.

The straton runtime is not started automatically, this needs to be set in the Linux environment.

If not activated straton Runtime runs for 2 hours, the license needs to be installed in a K5License.ini file, in the same folder as the t5runtime. Please note that the Editor must be licensed too.

In order to activate the license, type in a console, in the same directory as the Runtime:

▸   `echo 00-D0-C9-C7-F9-B5.0100.0.0.4FDD > K5License.ini`

(Replace 00-D0-C9-C7-F9-B5.0100.0.0.4FDD with your own license)
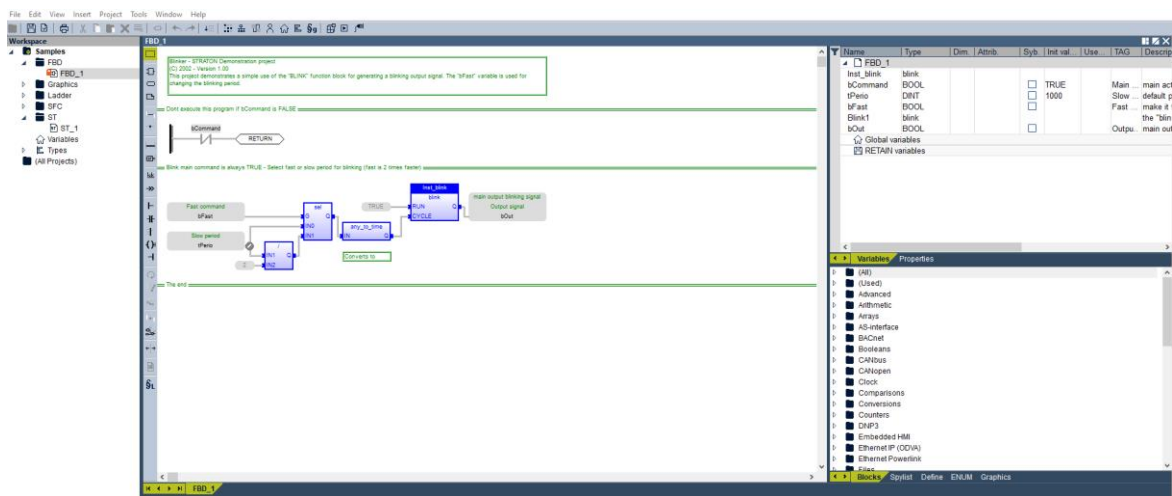
1.3. Download an application

First of all, start a straton Runtime on the platform.

Open the straton IDE and select the "Samples" project in the start page.

(NOTE: clicking on the "Demo projects" title opens the demo projects' folder)

Download the application to the straton runtime:

Select the communication parameters in menu Tools/Communication Parameters

Establish the connection through menu Project/Online ( )
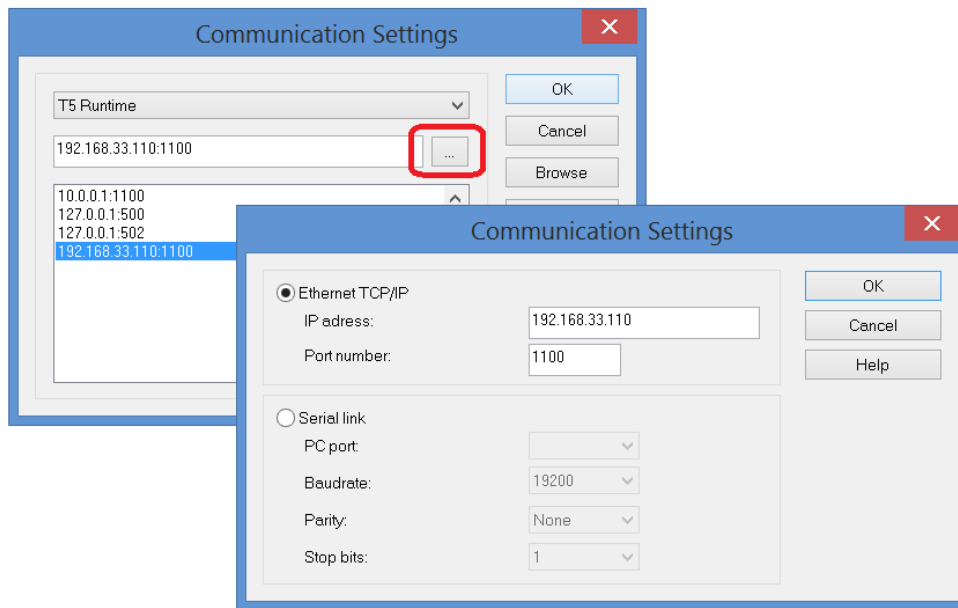
RESULT IS:

The download is successful and application starts correctly.

The runtime is not started or communication parameters are wrong.

The application is not yet downloaded or an error occurs during startup. More detail can be found in the output view.

Examples with different Linux OS (x86 version)

1.4. Tested with Debian 9.8 / Fedora 29 workstation / Ubuntu 16.04

Download the runtime to your hardware:

```
[liveuser@localhost-live ~]$ ls
Desktop    Downloads  Pictures   t592energy  Videos
Documents  Music      Public     Templates
```

Set the execution rights to the runtime file:

```
[liveuser@localhost-live ~]$ chmod +x t592energy
[liveuser@localhost-live ~]$ ls
Desktop    Downloads  Pictures   t592energy  Videos
Documents  Music      Public     Templates
```

Then start the runtime:

```
[liveuser@localhost-live ~]$ sudo ./t592energy
T5 runtime - Linux Multithreaded - Dec 19 2017
Devkit V9.2.171012 - 2016 - (c) COPA-DATA France

Registry
IEC60870 Slave  (800)V43365
IEC60870 Master (800)V42229
IEC61850 Slave  (800)V42229
IEC61850 Master (800)V43365
Profinet IO Device (800)V42229
Profinet IO Controller (800)V42229
Driver T5BusShm2: Shared memory V9.2.0
Driver T5BusMailbox: Mailbox V9.2.0
Driver T5DataServer: Data Server V9.2.0
Driver T5EIPC: Ethernet/IP Scanner V9.2.0
Driver T5EIPS: Ethernet/IP Adapter V9.2.0
Driver T5EIPTAG: Ethernet/IP Tag Client V9.2.0
Driver T5EIPFIO: Ethernet/IP PointIO / FlexIO V9.2.0
Driver T5BusExCANOpen: CANOpen master V9.2.0
Driver T5BusCompactCom V9.2 - Stack HMS V.2.02.01
Driver T5BusEthercat V9.2 - Stack Acontis 2.8.1.01
Driver T5BusExMQTT: MQTT Client V9.2.0
SQLITE
DNP3 Master from CD (800)V43152
DNP3 Outstation from CD (800)V43152

Ready - Press CTRL+C to exit.

LICENSE : Missing Key file

DEMO version - limited to 15 minutes!
```

1.5. Tested with Ubuntu 14.04

In the case of Ubuntu 14.04 and older runtimes, error messages such as the following one could occur:

```
hugo@hugo-VirtualBox:~$ ./t592energy
./t592energy: /usr/lib/i386-linux-gnu/libstdc++.so.6: version `
GLIBCXX_3.4.20' not found (required by ./t592energy)
```

This message means that the OS does not have the appropriate version of libstdc++.so.6 (library used to do some C/C++ coding) or gcc (code compiler).

In order to solve this issue, two different methods are existing:

1.5.1. Update and upgrade your system

▸   `sudo apt update && sudo apt upgrade -y`

It will update all components/software/libraries already installed and upgrade the OS.

WARNING: if you don't want to change your OS version, do not use this method.

### 1.5.2. Cleaning the existing gcc and installing the correct one

First of all update the system:

▸   `sudo apt update`

▪   Then get the 'synaptic' package manager to proceed easily in the next steps:

▸   `sudo apt-get synaptic`

▪   Once installed, start it:
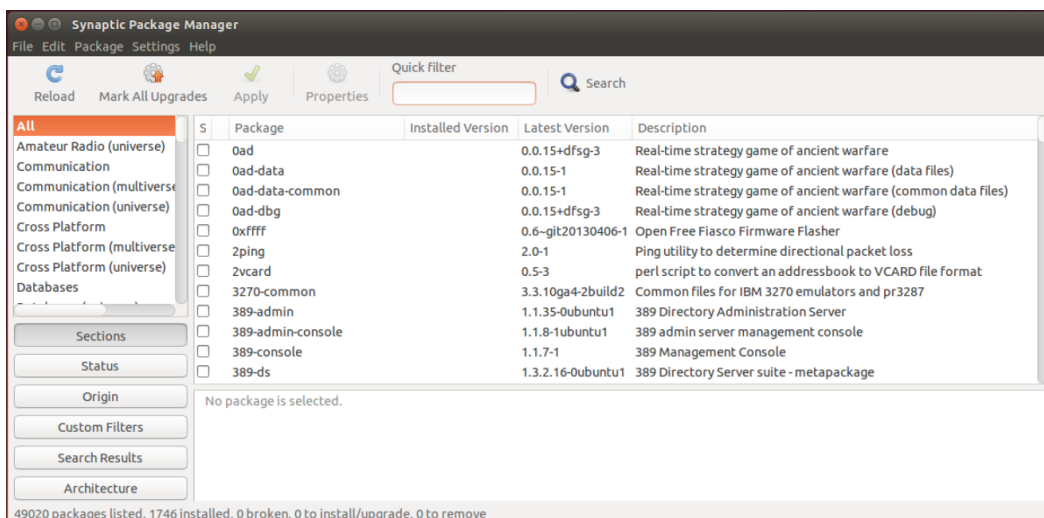
From this interface, all the installed packages on the system are visible. It is also possible to install or uninstall it. Looking for the gcc packages leads to:
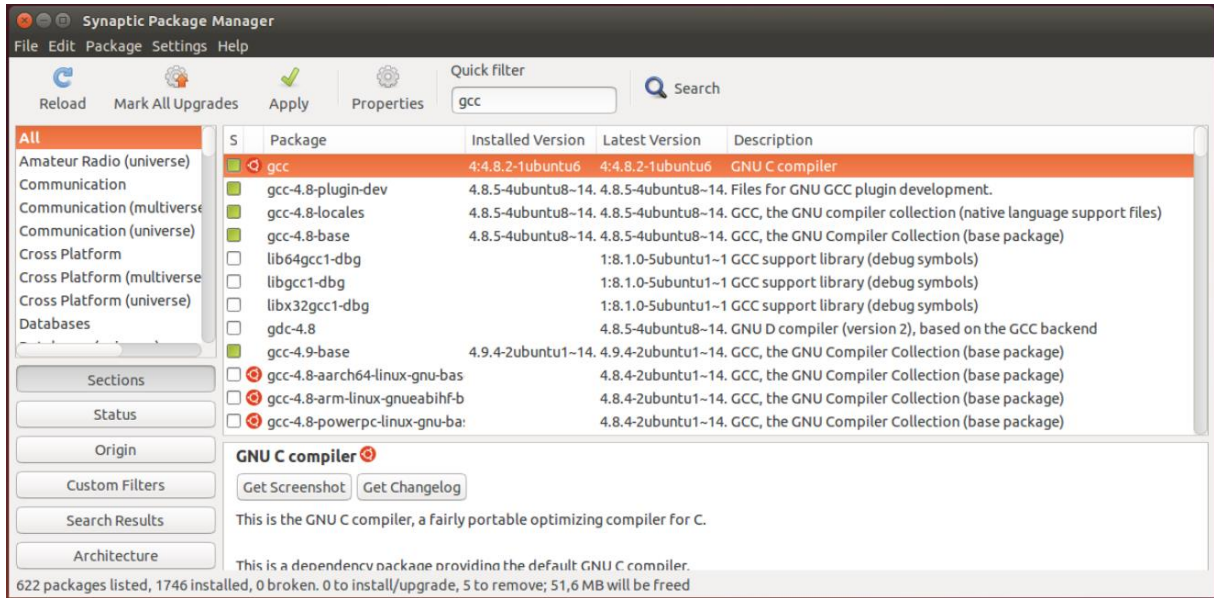
At least the version 4.8 of gcc is needed for the runtime to run correctly. If the system has older versions of gcc installed then uninstall all these versions first before installing a newer one.

2. Test on a 64 bit OS (Ubuntu 18.04.2 LTS x64)

Always check the name of the delivery when downloading the runtime. For 9.3 and older runtimes, this should look like 'T5LINUX-**x86**-ENERGY', meaning that the runtime has been compiled for a 32 bit Operating System (x86 OS)

After setting the execution rights to the runtime (`#sudo chmod +x t5runtime` or `#sudo chmod +x run.sh`), trying to launch it on an x64 OS may lead to an error message like the following one:

```
ab@ubuntu:~$
ab@ubuntu:~$ sudo ./t5linux_x86energy_91
sudo: unable to execute ./t5linux_x86energy_91: No such file or directory
ab@ubuntu:~$
```

First of all, install the latest x86 / x64 library package using the following command:

> ▸ `sudo apt-get install gcc-multilib`

Then this should be possible to start the runtime correctly. If not, use the following command to check which DLLs are linked to the runtime and if some are missing:

> ▸ `sudo ldd ./t5runtime`

3. Frequently Asked Questions

HOW TO GET THE MAC ADDRESS OF THE ETHERNET CARD(S)?

To get the MAC address use the following command: **`ifconfig`**

HOW TO DISPLAY THE CONTENT OF A FILE?

The following command can be used: **`cat <filename>`**

HOW TO EDIT THE K5LICENSE.INI?

File can be edited using: **`sudo nano <filename>`**

Use CTRL+X to close the file.

HOW TO CHANGE THE EXECUTION MODE OF A FILE?

By default a file copied to Linux do not get the execution privilege.

To set this privilege use the command: **`chmod +x filename`**

HOW TO GET PROCESSES STATUS?

Two commands are available:

▶ ps –A

▶ top

HOW TO LIST NETWORK CONNECTION?

Use the command: **`netstat`**

MY RUNTIME DOES NOT START OR IMMEDIATELY STOPS…

Check the file size on your PC and on your device. This must perfectly fit.

If you downloaded the runtime to your device using an FTP Client like Filezilla, think to check that the Type of Transfer is set to 'Binary'

Another important thing is that for the moment (version 9.3 and older) the **demo runtimes for Linux are only built for x86 and ARM processors**! Thus, this may not run with x64 processors, even after installing specific libraries.

HOW CAN I DETERMINE THE LINUX VERSION I'M USING?

Type the following command: **`uname -a`**