How to: trng_server

REVISION HISTORY

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Chapter 1

Introduction

trng_server is a simple command line program to get random data from Kidekin TRNG. Its command line arguments are fully specified in trng_server.pdf. As **trng_server** is not very useful by itself, this document explain how to use it in conjunction with **trng_client**. Command line arguments for **trng_client** are fully specified in trng_client.pdf. Before trying out this guide it is strongly recommended to try how_to_trng_capture.pdf, it is simpler.

Chapter 2

Preliminary steps

The following steps are needed before attempting any of the other procedures.

1. Unzip the software package in a location where you have write permission
2. Plug in Kidekin TRNG
3. Open a console
4. Change directory to the location of the executables
    a. Windows: application_notes_software\ftdi_d2xx\trng_client_server\build_dir
    b. Linux (FTDI proprietary driver): application_notes_software\ftdi_d2xx\trng_client_server\build_dir_linux
    c. Linux (libftdi):
        i. application_notes_software\ftdi_d2xx\trng_client_server\build_dir_linux2
        ii. sudo apt-get install libftdi1

On Window the executable should run on any system with FTDI driver installed. On Linux, if none of the executables run, you need to rebuild them from source.

BUILDING LINUX EXECUTABLE WITH PROPRIETARY DRIVER

a. Change directory to application_notes_software\ftdi_d2xx\trng_client_server\
b. sudo apt-get install libusb-1.0-0-dev
c. Download and install Boost (the build script assume Boost 1.57.0 installed in /usr/local/lib)
d. If you have a different version of Boost or it is in a different location, adapt build.sh
e. ./build.sh

The FTDI library requires GLIBC 2.2.5. It should be possible to use it on systems with other GLIBC versions but that's fairly involved in beyond the scope of this document. Building with libftdi (open source library) is way easier.

BUILDING LINUX EXECUTABLE WITH LIBFTDI OPEN SOURCE DRIVER

a. Change directory to application_notes_software\ftdi_d2xx\trng_client_server\
b. sudo apt-get install libftdi1
c. Download and install Boost (the build script assume Boost 1.57.0 installed in /usr/local/lib)
d. If you have a different version of Boost or it is in a different location, adapt build.sh
e. ./build.sh

Chapter 3

Basic usage with native client

This chapter explains how to connect a single native client running on the same machine as the server.

SINGLE MACHINE USAGE:

1. launch the server on an available port:
    a. Windows: **trng_server 1234**
    b. Linux: **sudo ./trng_server 1234**
2. Open a second console
3. Change directory to the location of the executables
4. launch the client with local host as address and on the same port as the server
    a. Windows: **trng_client 127.0.0.1 1234**
    b. Linux: **./trng_client 127.0.0.1 1234**
5. At the client's prompt, type "2" to request the creation of a file with 2 MB of random data
6. A file "reply_0.dat" should be created in the same directory as **trng_client**

If the port 1234 is not available on you machine, you can try another one, the essential thing is to use the same port for both the server and the client.

Chapter 4

Basic usage with java client

This chapter explains how to connect a single java client running on the same machine as the server.

SINGLE MACHINE USAGE WITH JAVA CLIENT:

1. Make sure your computer has java installed.
    a. You an check in a console by typing "java -version".
    b. If necessary, install Java Runtime Environment (JRE).
2. Follow the procedure Single machine usage, but at step 4 invoke the java version of the client:
    a. **java TrngClient 127.0.0.1 1234**

Chapter 5

Client running on remote machine

This chapter explains how to connect a single client running on a different machine than the server. The procedure is the same as Single machine usage however in practice it involves a bit of network setup too. Network configuration is a vast subject so this section does not provide an exhaustive guide but rather few steps which may hep you to sort things out.

This procedure assume two machines connected to the same WIFI router.

REMOTE CLIENT CONNECTION:

1. Make sure the procedure Single machine usage work on the server machine. Let the trng_server running.
2. Get the IP address of the server machine:
    a. Windows:
        i. type ipconfig in a console
        ii. look for the entry corresponding to the connection with the WIFI router. For example "Wireless LAN adapter Wi-Fi:".
        iii. note the corresponding IP address. For example " IPv4 Address. . . . . : 192.168.0.36".
    b. Linux: similar appraoch as in Windows. Command: ip addr show
3. On the client machine:
    a. Make sure that you can ping the server machine: ping <IP address>
    b. Launch trng_client with the server's IP and the same port number as before.
    c. Type 1 at trng_client's prompt to do a quick check of the connection. If nothing happens after 10s it is likely that there is a network setup problem.

About trng_client's prompt
trng_client always display the prompt no matter if it can connect or not to the server (because it does not try before really having to).

Chapter 6

Multiple clients

This chapter explains how to connect multiple client to a single server. The procedure is the same as Single machine usage, just start as many client as you which, possibly on diffrent machines. trng_server is not handling multiple connections in parallel, but it process requests quickly therefore it is able to serve several clients one after another. Of course that cannot scale to a high number of clients, trng_server is not meant to be a public server, it should be used within private networks.

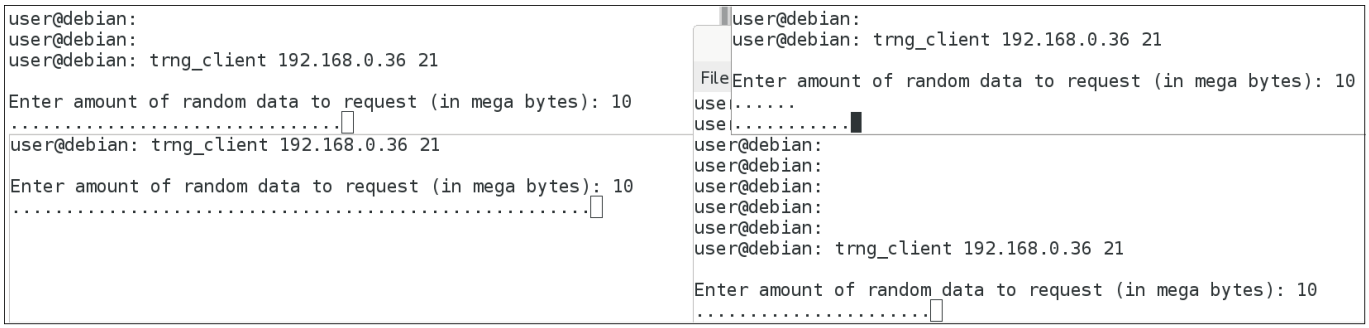

Figure 6.1: Several trng_client instances accessing the same trng_server in parallel

About multiple connections
Each client is getting different random numbers therefore trng_server bandwidth is divided among all connected clients.

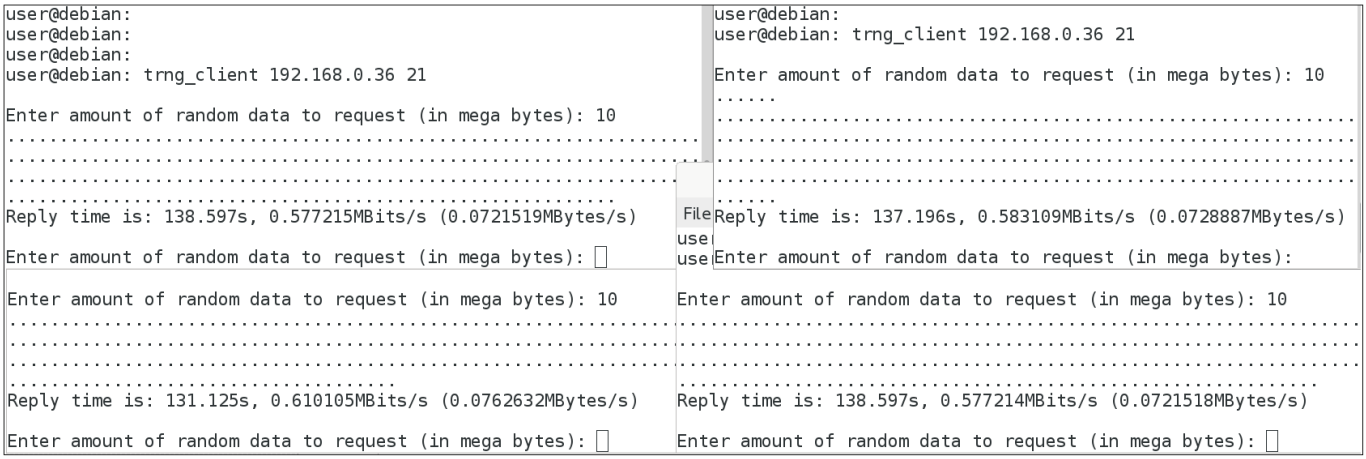

Figure 6.2: Bandwidth is equally divided between each client