



TRex Simulator

Information Security Inc.

Contents

- About TRex Simulator
- Testing Environment
- Building TRex Simulator
- Using TRex Simulator
- References

About TRex Simulator

- The TRex simulator is a linux application (no DPDK needed) that can run on any Linux (it can also run on TRex machine itself)
- Can create output pcap file from input of traffic YAML



Testing Environment

- Ubuntu 14.04 LTS

```
root@ubuntu:~# cat /etc/*rel*
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=14.04
DISTRIB_CODENAME=trusty
DISTRIB_DESCRIPTION="Ubuntu 14.04 LTS"
NAME="Ubuntu"
VERSION="14.04, Trusty Tahr"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 14.04 LTS"
VERSION_ID="14.04"
HOME_URL="http://www.ubuntu.com/"
SUPPORT_URL="http://help.ubuntu.com/"
BUG_REPORT_URL="http://bugs.launchpad.net/ubuntu/"
```

Building TRex Simulator

- Cloning GitHub repository

```
root@ubuntu:~# git clone https://github.com/cisco-system-traffic-generator/trex-core.git
Cloning into 'trex-core'...
remote: Counting objects: 34517, done.
remote: Compressing objects: 100% (197/197), done.
remote: Total 34517 (delta 196), reused 279 (delta 172), pack-reused 34145
Receiving objects: 100% (34517/34517), 122.86 MiB | 3.29 MiB/s, done.
Resolving deltas: 100% (24709/24709), done.
Checking connectivity... done.
Checking out files: 100% (3798/3798), done.
```

Building TRex Simulator

- `./b configure -> ./b build`

```
root@ubuntu:~/trex-core# cd linux
root@ubuntu:~/trex-core/linux# ./b configure
Setting top to                : /root/trex-core
Setting out to                 : /root/trex-core/linux/build
Checking for program 'g++, c++' : /usr/bin/g++
Checking for program 'ar'      : /usr/bin/ar
Build sanitized images (GCC >= 4.9.0) : no
'configure' finished successfully (0.108s)
root@ubuntu:~/trex-core/linux# ./b build
Waf: Entering directory `~/root/trex-core/linux/build'
[ 1/290] Compiling ../src/main.cpp
[ 2/290] Compiling ../src/bp_gtest.cpp
[ 3/290] Compiling ../src/gtest/bp_timer_gtest.cpp
[ 4/290] Compiling ../src/gtest/bp_tcp_gtest.cpp
[ 5/290] Compiling ../src/gtest/tuple_gen_test.cpp
```

Building TRex Simulator

- `./b configure -> ./b build`

```
[287/290] Compiling ../src/rpc-server/trex_rpc_cmd.cpp
[288/290] Compiling ../src/rpc-server/trex_rpc_zip.cpp
[289/290] Linking build/linux/bp-sim-64-debug
[290/290] Linking build/linux/bp-sim-64
Waf: Leaving directory `/root/trex-core/linux/build'
copy objects
'build' finished successfully (2m12.160s)
```

Using TRex Simulator

- TRex Simulator help menu

```
root@ubuntu:~/trex-core/scripts# ./bp-sim-64 -h
Usage: bp sim [OPTION] -f cfg.yaml -o outfile.erf

options:
  -d [s]      duration time of simulated traffic in seconds
  -v [1-3]    verbose mode
               1 show only stats
               2 run preview do not write to file
               3 run preview write stats file
  Note in case of verbose mode you don't need to add the output file

Warning : This program can generate huge-files (TB ) watch out! try this only on local drive

--pcap export the file in pcap mode
Examples:  1) preview show csv stats
#>bp_sim -f cfg.yaml -v 1

           2) more detail preview preview show csv stats
#>bp_sim -f cfg.yaml -v 2

           3) more detail preview plus stats
#>bp_sim -f cfg.yaml -v 3

           4) do the job !
#>bp_sim -f cfg.yaml -o outfile.erf

ASTF modes :

          csSIM_RST_SYN      0x17 23
          csSIM_RST_SYN1     0x18 24
          csSIM_WRONG_PORT   0x19 25
          csSIM_RST_MIDDLE   0x1a 26
          csSIM_RST_MIDDLE2  0x1b 27
          csSIM_DROP         0x1c 28
          csSIM_REORDER      0x1d 29
          csSIM_REORDER_DROP 0x1e 30

Copyright (C) 2015 by haim Cisco-System for IL dev-test
version : 1.0 beta

Compiled with GCC      : 4.8.4
Compiled with glibc   : 2.19 (host: 2.19)
Sanitized image      : no
```


Using TRex Simulator

- Preview plus stats

```
root@ubuntu:~/tr-ex-core/scripts# ./bp-sim-64 -f avl/sfr_branch_profile_delay_10.yaml -v 3
no client generator pool configured, using default pool
no server generator pool configured, using default pool
-- loading cap file avl/delay_10_http_get_0.pcap
-- loading cap file avl/delay_10_http_post_0.pcap
-- loading cap file avl/delay_10_https_0.pcap
-- loading cap file avl/delay_10_http_browsing_0.pcap
-- loading cap file avl/delay_10_exchange_0.pcap
-- loading cap file avl/delay_10_mail_pop_0.pcap
-- loading cap file avl/delay_10_mail_pop_1.pcap
-- loading cap file avl/delay_10_mail_pop_2.pcap
-- loading cap file avl/delay_10_oracle_0.pcap
-- loading cap file avl/delay_10_rtp_160k_full.pcap
-- loading cap file avl/delay_10_rtp_250k_full.pcap
-- loading cap file avl/delay_10_smtp_0.pcap
-- loading cap file avl/delay_10_smtp_1.pcap
-- loading cap file avl/delay_10_smtp_2.pcap
-- loading cap file avl/delay_10_video_call_0.pcap
-- loading cap file avl/delay_10_sip_video_call_full.pcap
-- loading cap file avl/delay_10_citrix_0.pcap
-- loading cap file avl/delay_10_dns_0.pcap
id,name, tps, cps,f-pkts,f-bytes, duration, Mb/sec, MB/sec, c-flows, PPS,total-Mbytes-duration,errors,fl
ws
00, avl/delay_10_http_get_0.pcap, ,432.58,432.58, 44 , 38006 , 0.17 , 131.52 , 16.44 , , 72 , 19033 , , 2 , 0 , 1
```

Using TRex Simulator

- Create a pcap file

```
root@ubuntu:~/trex-core/scripts# ./bp-sim-64 -f avl/sfr_branch_profile_delay_10.yaml -o CreateFile.pcap --pcap
no client generator pool configured, using default pool
no server generator pool configured, using default pool
-- loading cap file avl/delay_10_http_get_0.pcap
-- loading cap file avl/delay_10_http_post_0.pcap
-- loading cap file avl/delay_10_https_0.pcap
-- loading cap file avl/delay_10_http_browsing_0.pcap
-- loading cap file avl/delay_10_exchange_0.pcap
-- loading cap file avl/delay_10_mail_pop_0.pcap
-- loading cap file avl/delay_10_mail_pop_1.pcap
-- loading cap file avl/delay_10_mail_pop_2.pcap
-- loading cap file avl/delay_10_oracle_0.pcap
-- loading cap file avl/delay_10_rtp_160k_full.pcap
-- loading cap file avl/delay_10_rtp_250k_full.pcap
-- loading cap file avl/delay_10_smtp_0.pcap
-- loading cap file avl/delay_10_smtp_1.pcap
-- loading cap file avl/delay_10_smtp_2.pcap
-- loading cap file avl/delay_10_video_call_0.pcap
-- loading cap file avl/delay_10_sip_video_call_full.pcap
-- loading cap file avl/delay_10_citrix_0.pcap
-- loading cap file avl/delay_10_dns_0.pcap

normal
-----
min delta : 10 usec
```

Using TRex Simulator

- Verify the created pcap file

```
root@ubuntu:~/trex-core/scripts# file CreateFile.pcap
CreateFile.pcap: tcpdump capture file (little-endian) - version 2.4 (Ethernet, capture length 2000)
root@ubuntu:~/trex-core/scripts# tcpdump -r CreateFile.pcap | less
reading from file CreateFile.pcap, link-type EN10MB (Ethernet)
root@ubuntu:~/trex-core/scripts# tcpdump -r CreateFile.pcap | less
-8:00:00.010000 IP 16.0.0.1.41668 > 48.0.0.1.http: Flags [S], seq 401650919, win 32768, options [mss 1460], length 0
-8:00:00.010263 IP 16.0.0.2.59073 > 48.0.0.2.http: Flags [S], seq 402267839, win 32768, options [mss 1460], length 0
-8:00:00.010526 IP 16.0.0.3.10942 > 48.0.0.3.https: Flags [S], seq 404347093, win 32768, options [mss 1460], length 0
-8:00:00.010790 IP 16.0.0.4.28347 > 48.0.0.4.http: Flags [S], seq 404375002, win 32768, options [mss 1460], length 0
-8:00:00.011053 IP 16.0.0.5.45752 > 48.0.0.5.5003: Flags [S], seq 402690422, win 32768, options [mss 1460], length 0
-8:00:00.011316 IP 16.0.0.6.63157 > 48.0.0.6.pop3: Flags [S], seq 415942022, win 32768, options [mss 1460], length 0
-8:00:00.011580 IP 16.0.0.7.15026 > 48.0.0.7.pop3: Flags [S], seq 416647362, win 32768, options [mss 1460], length 0
-8:00:00.011843 IP 16.0.0.8.32431 > 48.0.0.8.pop3: Flags [S], seq 432665995, win 32768, options [mss 1460], length 0
```

References

- TRex Simulator

https://trex-tgn.cisco.com/trex/doc/trex_manual.html#_simulator

- Ubuntu 14.04 LTS

<http://old-releases.ubuntu.com/releases/14.04.1/ubuntu-14.04-desktop-amd64.iso>

- TRex Manual

https://trex-tgn.cisco.com/trex/doc/trex_manual.html