

Basic: Layer4 HTTP Traffic Generation: test_I4.py

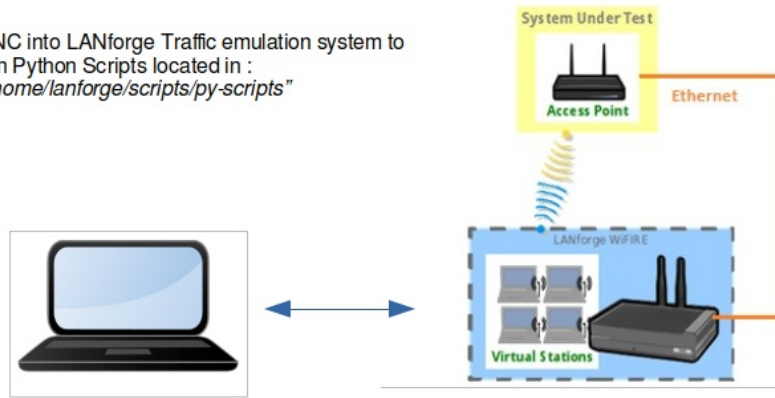
Goal: Use Python Script `test_I4.py` to Generate Layer4 HTTP Traffic

Each LANforge system has Python scripts installed at `/home/lanforge/scripts`. You can find `test_I4.py` at `/home/lanforge/scripts/py-script/test_I4.py`

The script `test_I4.py` will:

- Create stations (on the specified radio).
- Create Layer 4-7 endpoints.
- Monitor the `bytes-rd` attribute of the created endpoints.

VNC into LANforge Traffic emulation system to run Python Scripts located in :
`"/home/lanforge/scripts/py-scripts"`



The test type attribute is configurable:

```
bytes-rd    monitor the bytes
            read
urls        monitor the url's per
            second
```

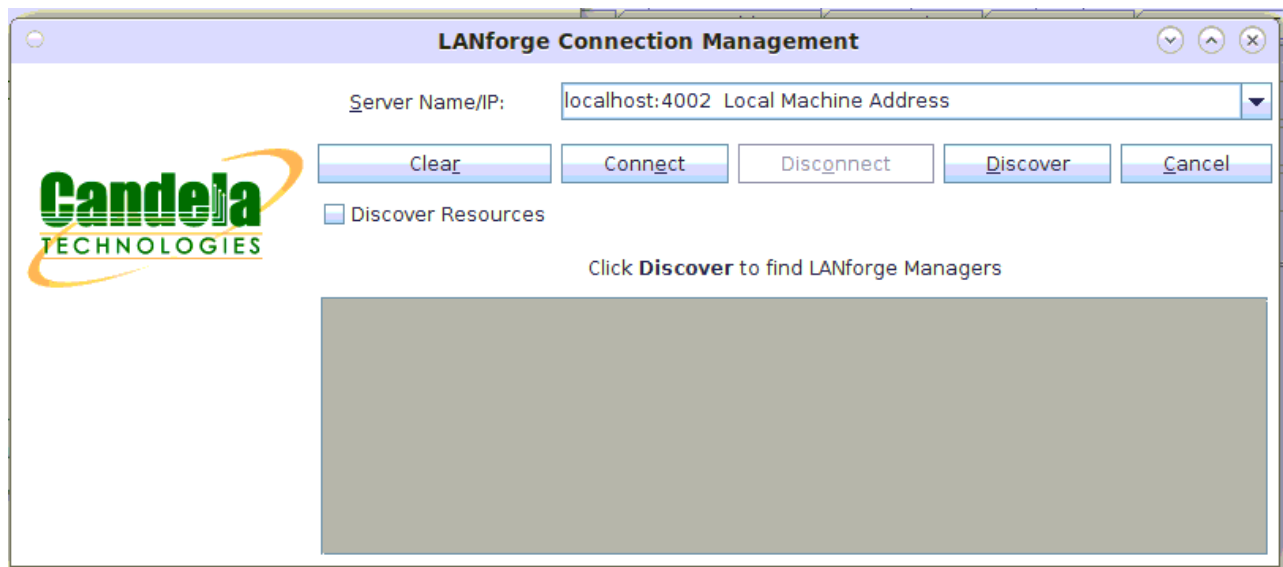
The monitored Layer 4-7 attribute statistics are recorded at the end of each polling interval. `test_I4.py` will monitor the `urls/s`, `bytes-rd`, or `bytes-wr` attribute of the layer 4-7 endpoints. These attributes can be tested over FTP using a `--ftp` flag. If the monitored value does not continually increase, this test will not pass. The script cleans up the stations and connections at the end of the test. An HTML and PDF report of the results will be generated and placed in the `/home/lanforge/html-reports` directory.

1. Start the LANforgeGUI if the GUI is not running:

To start the LANforgeGUI navigate to : `/home/lanforge/LANforgeGUI_5.4.5`

Execute : `./lfc1ient.bash`

Click the **Connect** button to connect to: `localhost:4002 Local Machine Address`



2. Where Do I Find Scripts?

Preinstalled Python Scripts Location on LANforge: `/home/lanforge/scripts/py-scripts`

Example script test_l4.py location: `/home/lanforge/scripts/py-scripts/test_l4.py`

3. Initial Information to Gather as input for the test_l4.py script:

Note: An example of a Device Under Test is an Access Point. The DUT information is used in report generation. The DUT information may be optional.

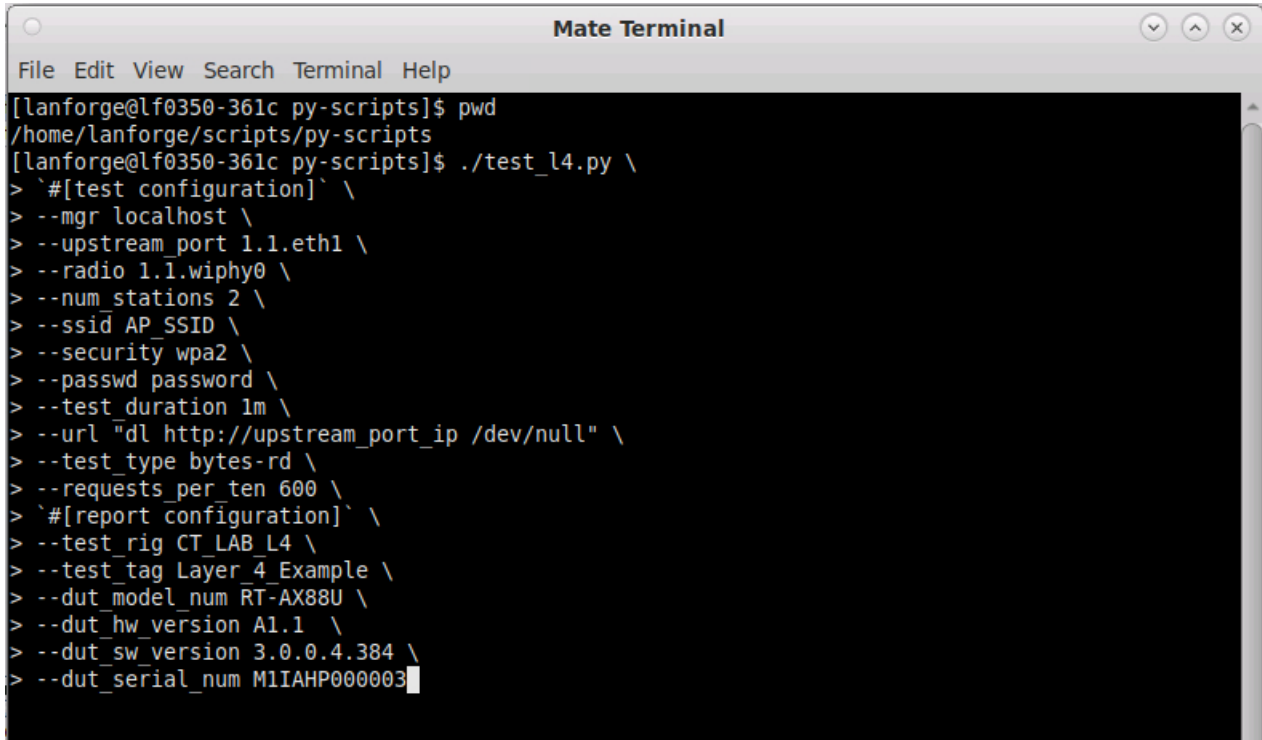
- A. The LANforge manager IP address: `--mgr [localhost]`
- B. The LANforge upstream port: `--upstream_port [eth port]`
- C. The LANforge radio information :
`--radio 'radio==[radio] stations==[number] ssid==[ssid] ssid_pw==[password] security==[security]'`
- D. The LANforge station creation amount: `--num_stations [2]`
- E. The AP SSID name: `--ssid [SSID]`
- F. The AP security type: `--security [open, wpa, wpa2, wpa3]`
- G. The AP SSID password: `--passwd [password]`
- H. The Test Duration : `--test_duration [value] (s - seconds, m - minutes, h - hours)`
- I. The Test URL: `--url "d1 http://upstream_port_ip /dev/nu11"`
- J. The Test Type: `--test_type [bytes-rd, urls]`
- K. The Service Request Interval: `--requests_per_ten [600]`
- L. The Test Rig: `--test_rig [test system id]`
- M. The Test Tag: `--test_tag [unique test id]`
- N. The Device Under Test Model Number: `--dut_model_num [mode1]`
- O. The Device Under Test Hardware Version: `--dut_hw_version [hw version]`
- P. The Device Under Test Software Version: `--dut_sw_version [sw version]`
- Q. The Device Under Test Serial Number: `--dut_serial_num [serial number]`

4. Example Command for a downloaded bytes-rd HTTP test with test_l4.py:

```
./test_l4.py --lfmgr localhost \  
--upstream_port 1.1.eth1 \  
--radio 1.1.wiphy0 \  
--num_stations 2 \  

```

```
--ssid AP_SSID \  
--security wpa2 \  
--passwd password \  
--test_duration 1m \  
--url "dl http://upstream_port_ip /dev/null" \  
--test_type bytes-rd \  
--requests_per_ten 600 \  
--test_rig CT_LAB_L4 \  
--test_tag Layer_4_Example \  
--dut_model_num RT-AX88U \  
--dut_hw_version A1.1 \  
--dut_sw_version 3.0.0.4.384 \  
--dut_serial_num M1IAHP000003
```



The screenshot shows a terminal window titled "Mate Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal output is as follows:

```
[lanforge@lf0350-361c py-scripts]$ pwd  
/home/lanforge/scripts/py-scripts  
[lanforge@lf0350-361c py-scripts]$ ./test_l4.py \  
> `#[test configuration]` \  
> --mgr localhost \  
> --upstream_port 1.1.eth1 \  
> --radio 1.1.wiphy0 \  
> --num_stations 2 \  
> --ssid AP_SSID \  
> --security wpa2 \  
> --passwd password \  
> --test_duration 1m \  
> --url "dl http://upstream_port_ip /dev/null" \  
> --test_type bytes-rd \  
> --requests_per_ten 600 \  
> `#[report configuration]` \  
> --test_rig CT_LAB_L4 \  
> --test_tag Layer_4_Example \  
> --dut_model_num RT-AX88U \  
> --dut_hw_version A1.1 \  
> --dut_sw_version 3.0.0.4.384 \  
> --dut_serial_num M1IAHP000003
```

5. Example Command for a downloaded url/s HTTP test with **test_l4.py**:

```
./test_l4.py --lfmgr localhost \  
--upstream_port 1.1.eth1 \  
--radio 1.1.wiphy0 \  
--num_stations 2 \  
--ssid AP_SSID \  
--security wpa2 \  
--passwd password \  
--test_duration 1m \  
--url "dl http://upstream_port_ip /dev/null" \  
--test_type urls \  
--requests_per_ten 600 \  
--test_rig CT_LAB_L4 \  
--test_tag Layer_4_Example \  
--dut_model_num RT-AX88U \  
--dut_hw_version A1.1 \  
--dut_sw_version 3.0.0.4.384 \  
--dut_serial_num M1IAHP000003
```

```
Mate Terminal
File Edit View Search Terminal Help
[lanforge@lf0350-361c py-scripts]$ pwd
/home/lanforge/scripts/py-scripts
[lanforge@lf0350-361c py-scripts]$ ./test_l4.py \
> `#[test configuration]` \
> --lfmgr localhost \
> --upstream_port 1.1.eth1 \
> --radio 1.1.wiphy0 \
> --num_stations 2 \
> --ssid AP_SSID \
> --security wpa2 \
> --passwd password \
> --test_duration 1m \
> --url "dl http://upstream_port_ip /dev/null" \
> --test_type urls \
> --requests_per_ten 600 \
> `#[report configuration]` \
> --test_rig CT_LAB_L4 \
> --test_tag Layer_4_Example \
> --dut_model_num RT-AX88U \
> --dut_hw_version A1.1 \
> --dut_sw_version 3.0.0.4.384 \
> --dut_serial_num M1IAHP000003
```

6. Results for test_l4.py are located in `/home/lanforge/html-reports`:

```
Mate Terminal
File Edit View Search Terminal Help
7
1659551704.658922 INFO      item sta0000_l4 test_l4.py 256
1659551704.659637 INFO      item sta0001_l4 test_l4.py 256
1659551704.661618 INFO      self.csv_results_file -results.csv test_l4.py 216
1659551704.662043 INFO      csv_results_file: -results.csv test_l4.py 810
1659551704.727016 INFO      write_output_html: /home/lanforge/html-reports/2022-08-03-11-32-
25_test_l4/2022-08-03-11-32-25-test_l4.html lf_report.py 335
1659551704.728430 INFO      write_output_index_html: /home/lanforge/html-reports/2022-08-03-
11-32-25_test_l4/index.html lf_report.py 323
1659551706.899609 INFO      Stopping CXs... l4_cxprofile.py 71
..
1659551707.116932 INFO      Cleaning up cxs and endpoints l4_cxprofile.py 131
1659551707.358503 INFO      Cleaning up stations station_profile.py 376
1659551707.584649 INFO      LFUtils: Waiting until 2 ports disappear... LFUtils.py 572
1659551709.141561 INFO      LFUtils::wait until ports disappear:: Request returned None: [ht
tp://localhost:8080/port/1/1/sta0000,sta0001?fields=alias] LFUtils.py 610
1659551709.142251 INFO      LFUtils: Waiting until 2 ports disappear... LFUtils.py 572
1659551709.156003 INFO      LFUtils::wait until ports disappear:: Request returned None: [ht
tp://localhost:8080/port/1/1/sta0000,sta0001?fields=alias] LFUtils.py 610
1659551709.157082 INFO      Full test passed test_l4.py 879
1659551709.157956 INFO      ----- PASSING TESTS ----- lfcli_base.py 522
1659551709.158563 INFO      PASSED: PASS: Station build finished lfcli_base.py 524
1659551709.158879 INFO      PASSED: All stations got IPs lfcli_base.py 524
2 out of 2 tests passed successfully. Exiting script with script success.
1659551709.159600 INFO      2 out of 2 tests passed successfully. Exiting script with script
success. lfcli_base.py 559
[lanforge@lf0350-361c py-scripts]$
```

7. Results for test_l4.py are located in `/home/lanforge/html-reports`:

The script produces both HTML and PDF results:

- example of **HTML** output
- example of **PDF** output
- example of **kpi.csv** output

Additional script options may be shown by typing `./test_l4.py --help`