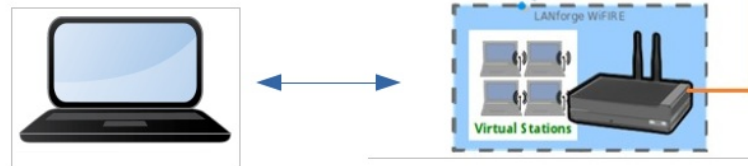


Basic: Layer4 FTP Traffic Generation: test_I4.py

Goal: Use Python Script **test_I4.py** to Generate Layer4 FTP Traffic

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

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



`/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.

The test type attribute is configurable:

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

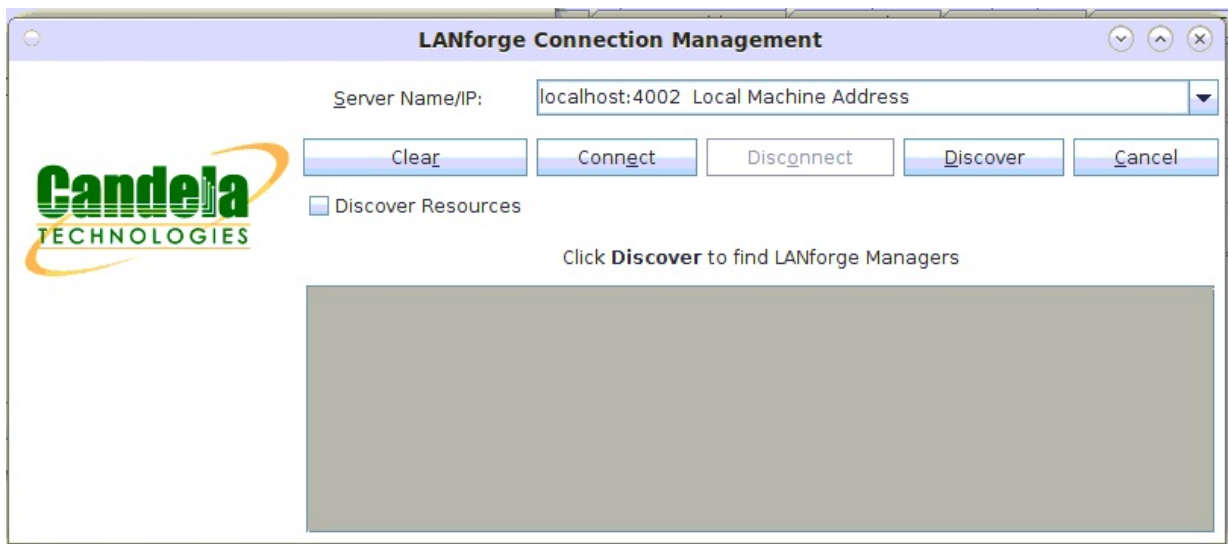
The monitored Layer 4-7 attribute statistics are recorded at the end of each polling interval. `test_I4.py` will monitor the `urls/s`, `bytes-rd`, or `bytes-wr` attribute of the layer 4-7 endpoints. These attributes can be tested over FTP using a `--ftp` flag. If the monitored value does not continually 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.

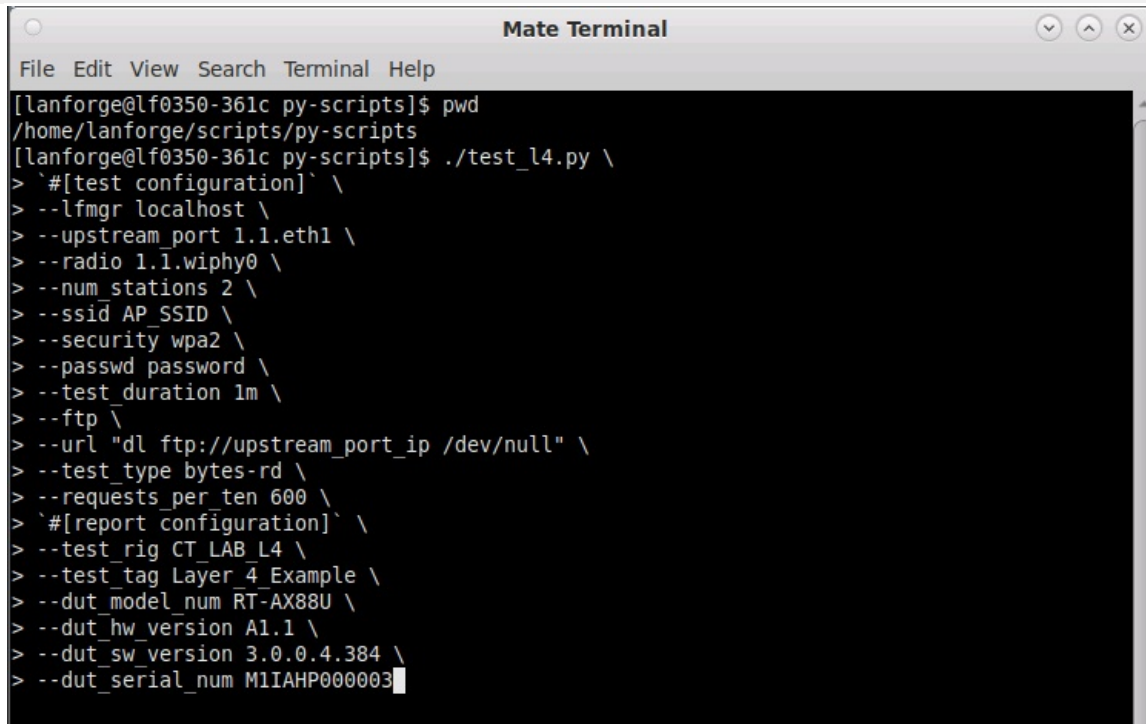
- A. The LANforge manager IP address: `--mgr [localhost]`
- B. The LANforge upstream port: `--upstream_port [eth port]`
- C. The LANforge radio information :
`--radio 'radio==[radio] stations==[number] ssid==[ssid] ssid_pw==[password] security==[security]'`
- D. The LANforge station creation amount: `--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 FTP Test Switch: `--ftp [enables FTP testing]`
- J. The Test URL: `--url "d1 ftp://upstream_port_ip /dev/null"`
- K. The Test Type: `--test_type [bytes-rd]`
- L. The Service Request Interval: `--requests_per_ten [600]`
- M. The Test Rig: `--test_rig [test system id]`
- N. The Test Tag: `--test_tag [unique test id]`
- O. The Device Under Test Model Number: `--dut_model_num [model]`
- P. The Device Under Test Hardware Version: `--dut_hw_version [hw version]`
- Q. The Device Under Test Software Version: `--dut_sw_version [sw version]`
- R. The Device Under Test Serial Number: `--dut_serial_num [serial number]`

4. Example Command for a downloaded bytes-rd FTP 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 \  
--ftp \  
--url "dl ftp://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
```



```
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 \  
> --ftp \  
> --url "dl ftp://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/s FTP 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 \  
--ftp \  
--url "dl ftp://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 \
> --ftp \
> --url "dl ftp://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
1659719453.671809 INFO      item sta0000_l4 test_l4.py 256
1659719453.672634 INFO      item sta0001_l4 test_l4.py 256
1659719453.674645 INFO      self.csv_results_file -results.csv test_l4.py 216
1659719453.675257 INFO      csv_results_file: -results.csv test_l4.py 810
1659719453.741720 INFO      write_output_html: /home/lanforge/html-reports/2022-08-05-10-06-15_test_l4/2022-08-05-10-06-15-test_l4.html lf_report.py 335
1659719453.743767 INFO      write_output_index_html: /home/lanforge/html-reports/2022-08-05-10-06-15_test_l4/index.html lf_report.py 323
1659719455.664310 INFO      Stopping CXs... l4_cxprofile.py 71
..
1659719455.958650 INFO      Cleaning up cxs and endpoints l4_cxprofile.py 131
1659719456.176748 INFO      Cleaning up stations station_profile.py 376
1659719456.398688 INFO      LFUtils: Waiting until 2 ports disappear... LFUtils.py 572
1659719457.430698 INFO      LFUtils::wait_until_ports_disappear:: Request returned None: [http://localhost:8080/port/1/1/sta0000,sta0001?fields=alias] LFUtils.py 610
1659719457.431388 INFO      LFUtils: Waiting until 2 ports disappear... LFUtils.py 572
1659719457.443248 INFO      LFUtils::wait_until_ports_disappear:: Request returned None: [http://localhost:8080/port/1/1/sta0000,sta0001?fields=alias] LFUtils.py 610
1659719457.444070 INFO      Full test passed test_l4.py 879
1659719457.444743 INFO      ----- PASSING TESTS ----- lfcli_base.py 522
1659719457.445157 INFO      PASSED: PASS: Station build finished lfcli_base.py 524
1659719457.445669 INFO      PASSED: All stations got IPs lfcli_base.py 524
2 out of 2 tests passed successfully. Exiting script with script success.
1659719457.446345 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`