

Layer 4-7: Web Browsing with Python

Goal: Perform web browsing test and collect various statistics.

Automate web browsing traffic scenario in the Layer 4-7 tab. Various statistics will be collected and reported to the Layer4-7 tab. This test is useful for simulating real web browsing activity.

Testing Prerequisites

You must be running at least LANforge version 5.5.1 on Linux and/or Windows resources.

To ensure we can get stats from Python, you should make sure the resources in question have access to the internet. Keep in mind, various websites will respond to a Python web scraping bot differently.

Linux

Open a terminal run the following command as user `lanforge`:

```
$ pip install selenium
```

or for Linux-based systems (like the ct523c):

```
$ sudo apt install chromium chromium-driver python3-selenium
```

Windows

You will need Chrome and a Chromedriver for the Chrome version installed. These should have been installed with `windows_lf_setup.ps1`. Please open a terminal in Windows and navigate to the Downloads directory.

Navigate to this directory in PowerShell with the following command:

```
PS> cd C:\Users\Administrator\Downloads
```

List files with this command:

```
PS> ls
```

Inside this current directory, you should see files like: `chrome.msi` and `chrome_driver.zip`. To test if these are installed correctly, run this command in the PowerShell terminal:

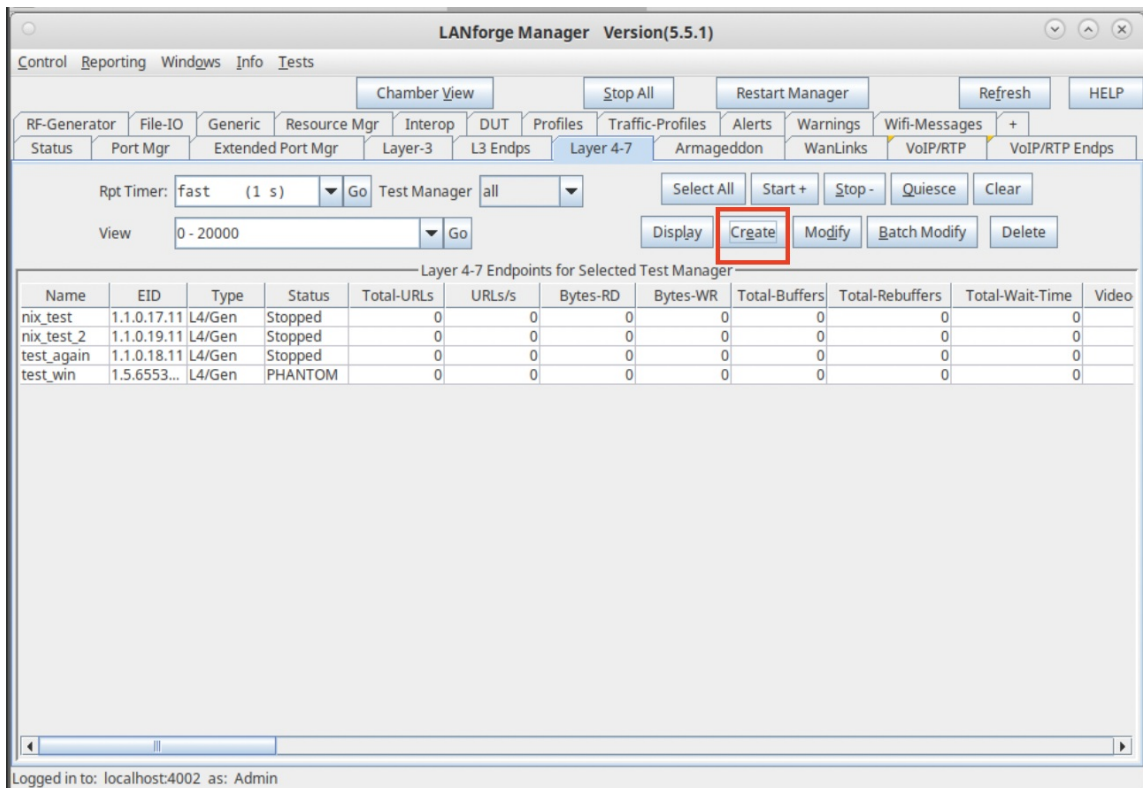
```
PS> Test-Path "C:\Program Files (x86)\LANforge-Server\chromedriver-win64" -PathType Container
```

This should return the value `True`. If not, please re-run the `windows_lf_setup.ps1` script in PowerShell, or contact support for help.

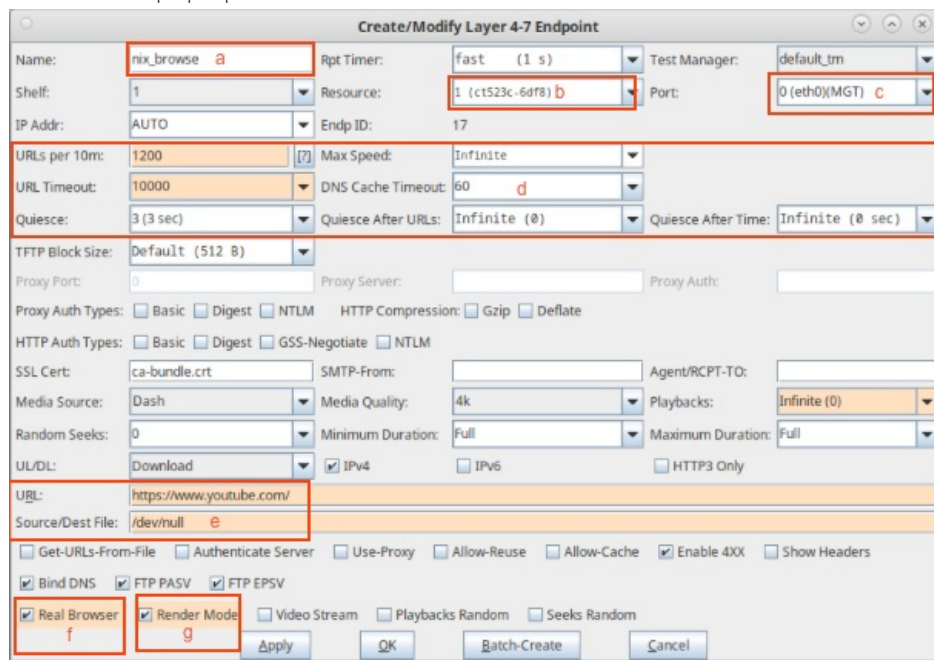
Creating a Web Browsing Endpoint:

1. Navigate to the Layer 4-7 tab in the LANforge.

2. Click the **Create** button.



3. A new window should pop-up.



1. [a] Provide a **Name** for the Endpoint.
 2. [b] Select the LANforge **Resource** to run the automation on.
 3. [c] Select the **Port** drop down for the resource in step 2b.
 4. [d] Select **URLs per 10m**, **Max Speed**, **URL Timeout**, **Quiesce**, **Quiesce after URLs**, and **Quiesce After Time** values.
 5. [e] Enter **URL**, or a text file containing URL's. To use a text file of URL's, you must manually copy the file to the machine's (the resource's) /home/lanforge directory. See also: [Layer 4 user guide](#). For **Source/Dest File**, use /dev/null for linux based machines, and NUL for Windows based machines.
 6. [f] Ensure that **Real Browser** checkbox is filled.
 7. [g] If needed, check **Render Mode** on. This will display the web browser GUI on the resource.
4. Click the **Apply** button in the Creation Window.

5. Click **Start**.

Observing Statistics:

1. Navigate to the Layer 4-7 tab in LANforge.
2. Wait for Layer 4-7 Endpoint to begin.

i Depending on the web site and other parameters selected (like: **Quiesce After Time**, or **Quiesce After URLs**), the statistics will take a few seconds to show up.

Name	EID	Type	Status	Total-URLs	URLs/s	Bytes-RD	Bytes-WR	Total-Buffers	Total-Reuffers	Total-Wait-Time	Video
testing	1.5.0.20.11	L4/Gen	Run	9	0.15	185,973,592	202,814	0	0	0	

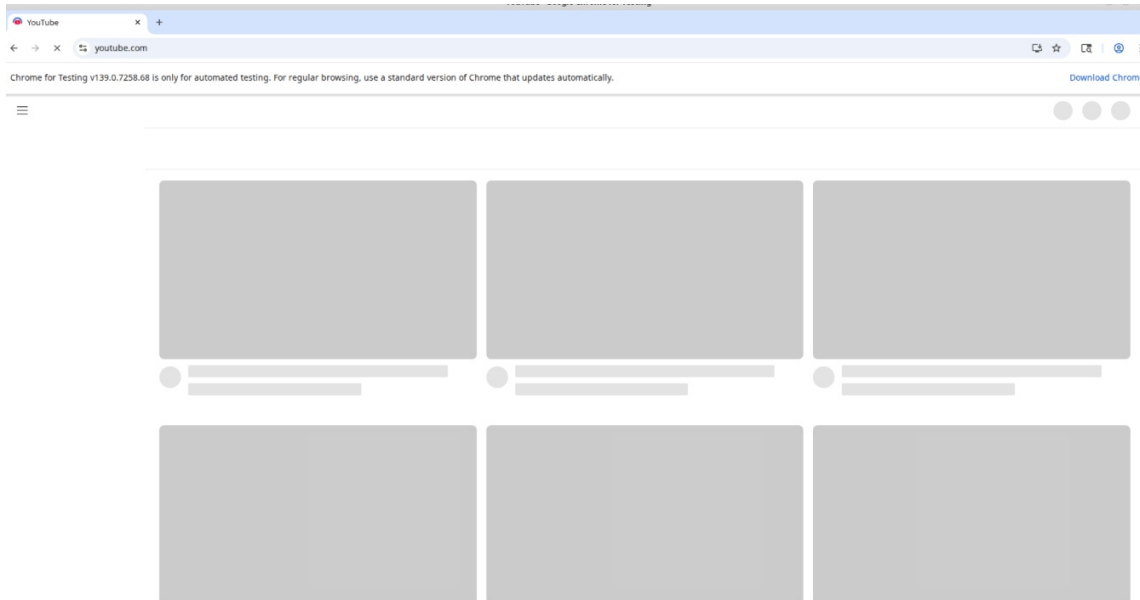
3. To view the statistics on the machine, navigate to the Resource Mgr tab and connect using VNC. See also: [Connect to LANforge using VNC](#).

i Remmina works well for Linux based devices. RealVNC works well for Windows based devices. A Windows Terminal session is shown below.

```
Administrator: LANforge Dat x + v
TX=0.0075, RX=7.9374, Bytes-RD=59530716, Bytes-WR=56220, Total-ERR=0, Total-URLs=3
TX=0.011, RX=10.6732, Bytes-RD=80048895, Bytes-WR=82382, Total-ERR=0, Total-URLs=4
TX=0.0142, RX=13.5583, Bytes-RD=101687041, Bytes-WR=106775, Total-ERR=0, Total-URLs=5
TX=0.0175, RX=16.2933, Bytes-RD=122200068, Bytes-WR=131015, Total-ERR=0, Total-URLs=6
TX=0.0207, RX=19.1774, Bytes-RD=143830662, Bytes-WR=155099, Total-ERR=0, Total-URLs=7
TX=0.0239, RX=21.987, Bytes-RD=164902213, Bytes-WR=179083, Total-ERR=0, Total-URLs=8
TX=0.027, RX=24.7965, Bytes-RD=185973592, Bytes-WR=202814, Total-ERR=0, Total-URLs=9
TX=0.0302, RX=27.6062, Bytes-RD=207046367, Bytes-WR=226639, Total-ERR=0, Total-URLs=10
TX=0.0334, RX=30.4156, Bytes-RD=228116873, Bytes-WR=250765, Total-ERR=0, Total-URLs=11
TX=0.0366, RX=33.2251, Bytes-RD=249188035, Bytes-WR=274833, Total-ERR=0, Total-URLs=12
TX=0.0399, RX=36.0347, Bytes-RD=270260439, Bytes-WR=299093, Total-ERR=0, Total-URLs=13
TX=0.0428, RX=38.8442, Bytes-RD=291331774, Bytes-WR=321299, Total-ERR=0, Total-URLs=14
TX=0.0464, RX=41.6537, Bytes-RD=312402733, Bytes-WR=347784, Total-ERR=0, Total-URLs=15
TX=0.0496, RX=44.4632, Bytes-RD=333474333, Bytes-WR=371980, Total-ERR=0, Total-URLs=16
TX=0.0528, RX=47.2727, Bytes-RD=354544890, Bytes-WR=396066, Total-ERR=0, Total-URLs=17
TX=0.056, RX=50.5716, Bytes-RD=379286912, Bytes-WR=420161, Total-ERR=0, Total-URLs=18
TX=0.0589, RX=52.8169, Bytes-RD=396126378, Bytes-WR=441984, Total-ERR=0, Total-URLs=19
TX=0.0624, RX=55.7004, Bytes-RD=417752879, Bytes-WR=468135, Total-ERR=0, Total-URLs=20
TX=0.0653, RX=58.4366, Bytes-RD=438274717, Bytes-WR=490098, Total-ERR=0, Total-URLs=21
TX=0.0688, RX=61.3209, Bytes-RD=459906618, Bytes-WR=516146, Total-ERR=0, Total-URLs=22
TX=0.072, RX=64.0559, Bytes-RD=480419036, Bytes-WR=540356, Total-ERR=0, Total-URLs=23
TX=0.0753, RX=66.9399, Bytes-RD=502049134, Bytes-WR=564465, Total-ERR=0, Total-URLs=24
TX=0.0782, RX=69.675, Bytes-RD=522562379, Bytes-WR=586341, Total-ERR=0, Total-URLs=25
WARNING: All log messages before absl::InitializeLog() is called are written to STDERR
I0000 00:00:1755032000.138661 28392 voice_transcription.cc:58] Registering VoiceTranscriptionCapability
TX=0.0817, RX=72.5589, Bytes-RD=544191712, Bytes-WR=612465, Total-ERR=0, Total-URLs=26
TX=0.0849, RX=75.8581, Bytes-RD=568935570, Bytes-WR=636615, Total-ERR=0, Total-URLs=27
TX=0.0881, RX=78.1038, Bytes-RD=585778209, Bytes-WR=660716, Total-ERR=0, Total-URLs=28
TX=0.091, RX=80.9054, Bytes-RD=606790303, Bytes-WR=682187, Total-ERR=0, Total-URLs=29
```

i With Render Mode on, the web GUI will be displayed on the resource as

shown here.



Stopping the test:

1. If you configure Quiesce After URLs to be a value larger than 0 (infinite) the test will stop after the configured URL's. This also applies to Quiesce After Time. Otherwise, once the desired metric has been completed, click **Stop Test**.

Troubleshooting:

1. If the test fails to run, check the DNS nameserver settings.

Linux

open a bash terminal and type:

```
$ host -v google.com
```

This displays the relevant information such as:

Received 249 bytes from 75.75.75.75#3 in 44 ms

(The number of bytes, nameserver and ms will vary.) Please check that the nameserver settings are correct with:

```
$ cat /etc/resolv.conf
```

Windows

In PowerShell, use this command:

```
PS> nslookup google.com
```

This displays as:

```
Server: cdns01.comcast.net
Address: 75.75.75.75
Non-authoritative answer:
Name: google.com
```

Please check DNS settings on Windows with the following command:

```
PS> ipconfig /all
```

Find your DNS nameserver on the line starting with DNS Servers :

2. If the test continues to fail to run, check default routing.

Linux

Open a bash terminal and type:

```
$ mtr -r -c 5 google.com ↵
```

Errors will look like this: mtr: connect: Network is unreachable.

Windows

Open a PowerShell terminal and type the following command:

```
PS> tracert 8.8.8.8 ↵
```

If `tracert` returns nothing, or fails immediately then a default route may be missing.

3. Should other issues appear, please contact support for help.

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