

## Generating FTP Traffic Between Two Physical ports

**Goal:** Allow LANforge to simulate a FTP connection within the same system.

This scenario is useful if you wish to generate stateful FTP traffic between two physical ports using a single LANforge system. You will need two non-management physical ports connected to each other with a loopback cable or switch.

1. Configure the physical interfaces. We will set up eth1 as a client and eth2 as a FTP server.

A. Go to the **Port Mgr** tab and select eth1.

The screenshot shows the LANforge Manager interface, Version 5.3.4, with the Port Manager tab selected. The interface displays a table of all Ethernet interfaces (Ports) for all resources. The table has the following columns: Port, Phase, Down, IP, SEC, Alias, Parent Dev, RX Bytes, RX Pkts, Pps RX, bps RX, TX Bytes, TX Pkts, and Pps TX. The data in the table is as follows:

Port	Phase	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX
1.1.0			192.168.100.86	0	eth5		99,089	938	5	4,676	284,471	454	2
1.1.1			0.0.0.0	0	eth0		0	0	0	0	0	0	0
1.1.2			0.0.0.0	0	eth1		0	0	0	0	950	11	0
1.1.3			0.0.0.0	0	eth2		0	0	0	0	950	11	0
1.1.4			0.0.0.0	0	eth3		0	0	0	0	0	0	0
1.1.5			0.0.0.0	0	eth4		0	0	0	0	0	0	0

The interface also shows various control buttons like 'Stop All', 'Restart Manager', 'Refresh', 'HELP', 'Sniff Packets', 'Clear Counters', 'Reset Port', 'Delete', 'View Details', 'Create', 'Modify', and 'Batch Modify'. The status bar at the bottom indicates 'Logged in to: brent-6port:4002 as: Admin'.

B. Click **Modify** to configure port eth1.

The screenshot shows the 'eth1 (brent-6port) Configure Settings' dialog box. The 'Port Status Information' section shows 'Current: LINK-UP 1000bt-FD AUTO-NEGOTIATE Flow-Control TSO GSO GRO' and 'Driver Info: Port Type: Ethernet Driver: e1000e(3.2.6-k) Bus: 0000:03:00.0 Cur: 2.5GT/s x1 Max: 2.5GT/s x1'. The 'Port Configurables' section is divided into several panels:

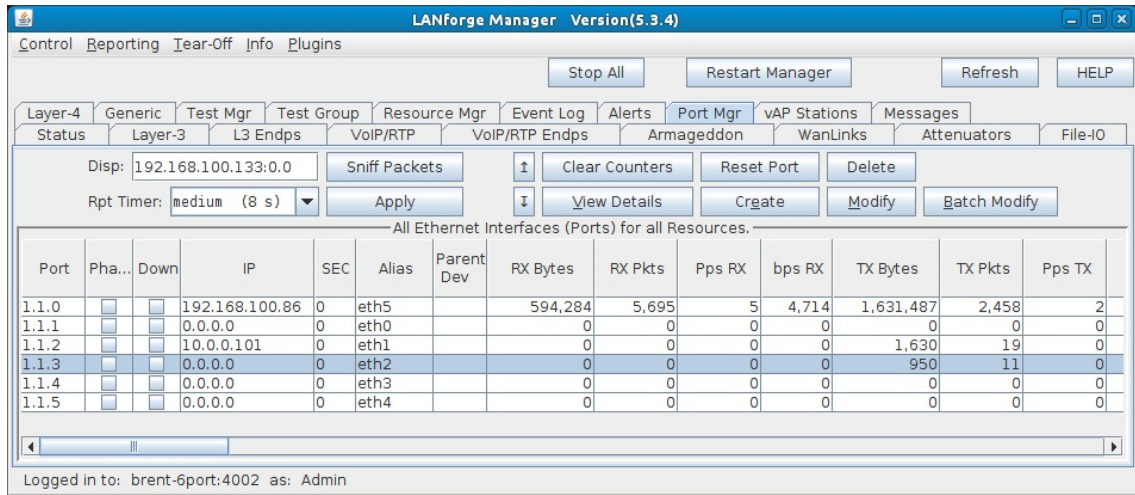
- Enable:** Includes checkboxes for 'Set IF Down', 'Set MAC', 'Set TX Q Len', 'Set MTU', 'Set Offload', 'Set Rate Info', 'Set PROMISC', 'Set Rx-All/FCS', 'Set Bypass', 'Set Bridge Info', and 'Set CPU Mask'.
- Services:** Includes checkboxes for 'HTTP', 'FTP', and 'RADIUS'.
- General Interface Settings:** Includes 'Down', 'Aux-Mgt', 'DHCP-IPv6', 'DHCP-IPv4', 'Secondary-IPs', 'DNS Servers: BLANK', 'IP Address: 10.0.0.101/24', 'IP Mask: 0.0.0.0', 'Gateway IP: 0.0.0.0', 'Alias:', 'MAC Addr: 00:90:0b:38:82:71', 'Br Cost: ignore', 'Rpt Timer: medium (8 s)', 'CPU Mask: NO-SET', 'DHCP Release', 'DHCP Vendor ID: None', 'DHCP Client ID: None', 'Peer IP: NA', 'Global IPv6: AUTO', 'Link IPv6: AUTO', 'IPv6 GW: AUTO', 'MTU: 1500', 'TX Q Len: 1000', 'Priority: ignore', 'Watchdog: 0', and 'WiFi Bridge: NONE'.
- Port Rates:** Includes radio buttons for '10bt-HD', '10bt-FD', '100bt-HD', '100bt-FD', '1000-FD', '10G-FD', and '40G-FD', with 'Autonegotiate' selected. Other options include 'Renegotiate', 'Restart Xcvr', 'PROMISC', 'RX-ALL', 'RX-FCS', 'Bypass NOW!', 'Bypass Power-UP', 'Bypass Power-DOWN', and 'Bypass Disconnect'.
- Advert Rates:** Includes checkboxes for '10bt-HD', '10bt-FD', '100bt-HD', '100bt-FD', '1000-FD', '10G-FD', '40G-FD', and 'Flow-Control'.
- Offload:** Includes checkboxes for 'TSO Enabled', 'UFO Enabled', 'GSO Enabled', 'LRO Enabled', and 'GRO Enabled'.

The dialog box has buttons for 'Print', 'View Details', 'Probe', 'Sync', 'Apply', 'OK', and 'Cancel'.

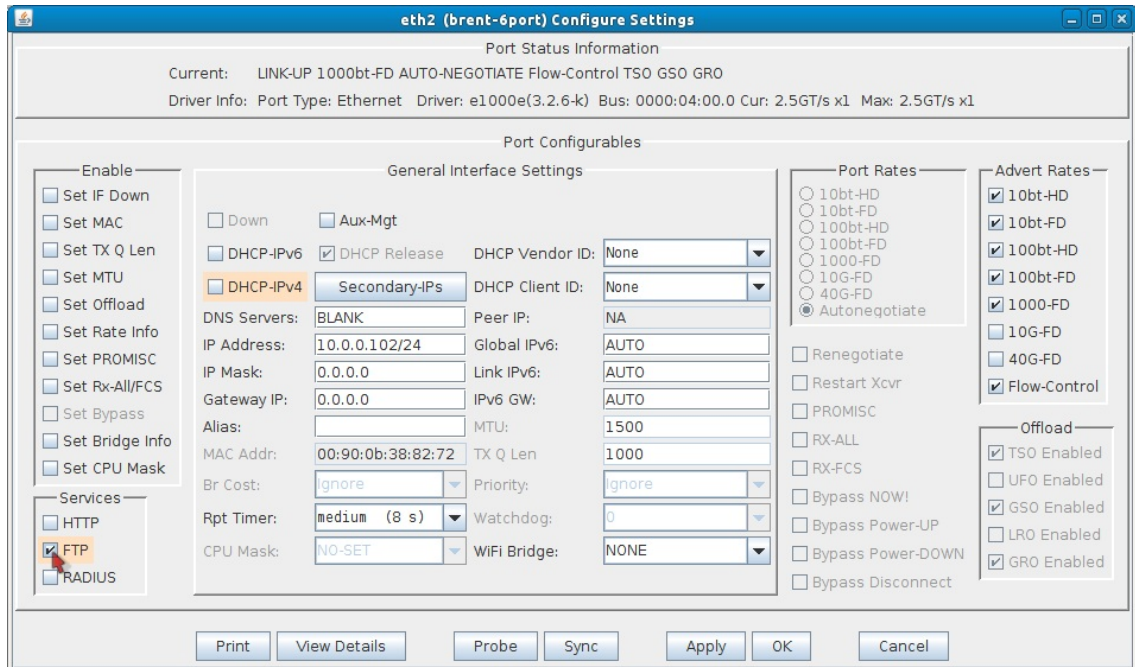
A. Set the IP Address to 10.0.0.101/24.

B. Click **OK**.

- C. While still in the **Port Mgr** tab, select eth2.



- D. Click **Modify** to configure port eth2.



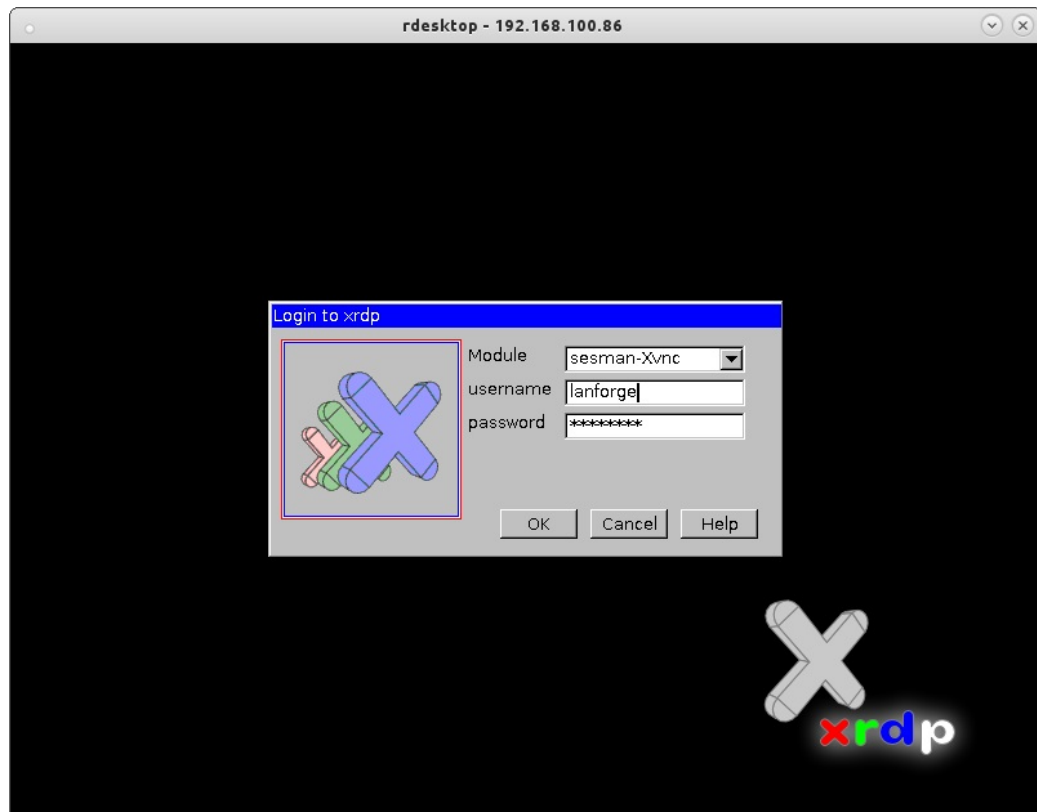
- Set the IP Address to **10.0.0.102/24**.
- Enable **FTP** under **Services**.
- Click **OK**.

- Create a file for the FTP client to download/upload. This is optional if you already have a file in mind to test with, just make sure the file is in **/home/Lanforge** (the default directory for FTP). Step 3 explains how to upload a file from a Windows machine.

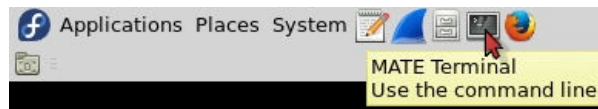
A. First, you'll need to open a console on the LANforge system.

- A. Log into the machine **directly** or remotely through **rdesktop**. The user/password should be **lanforge/lanforge** for both.
- B. To log in via **rdesktop** type the following command into a console (replace LANforge-IP with the IP of your LANforge system):

```
rdesktop LANforge-IP
```



- C. Log in with user/password **lanforge/lanforge**.
- D. Once you are on the system, a console should already be open. If you don't see a console, go ahead and open one by clicking the console icon in the top menu bar (shown in the below screenshot).

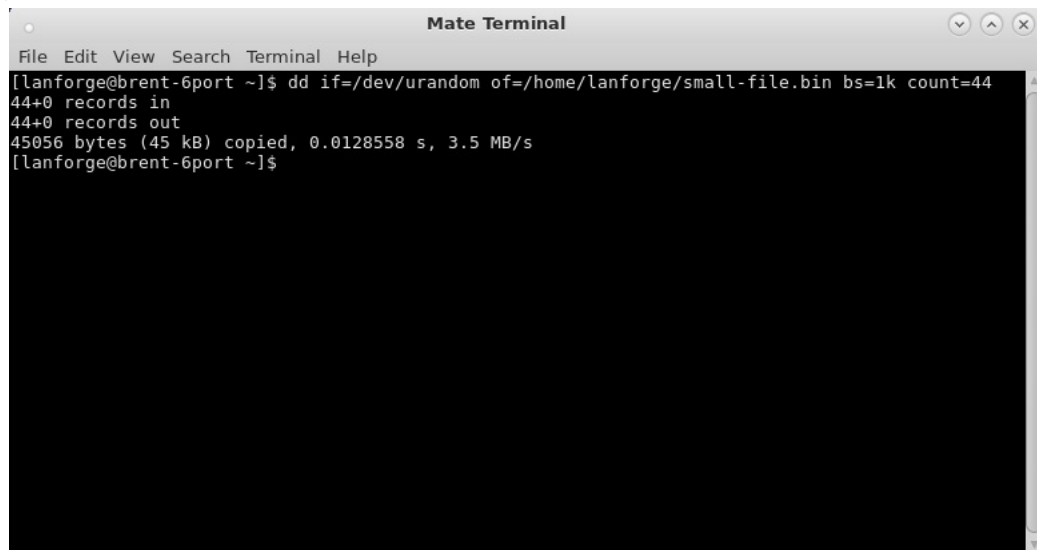


- B. Once you have a console ready, use the below commands to create a small or large file. These files will just contain random text.

**Note:** These files will be created in the `/home/lanforge` directory. This is the default directory used for FTP on LANforge.

- A. **Small file (45 KB):**

```
dd if=/dev/urandom of=/home/lanforge/small-file.bin bs=1k count=44
```

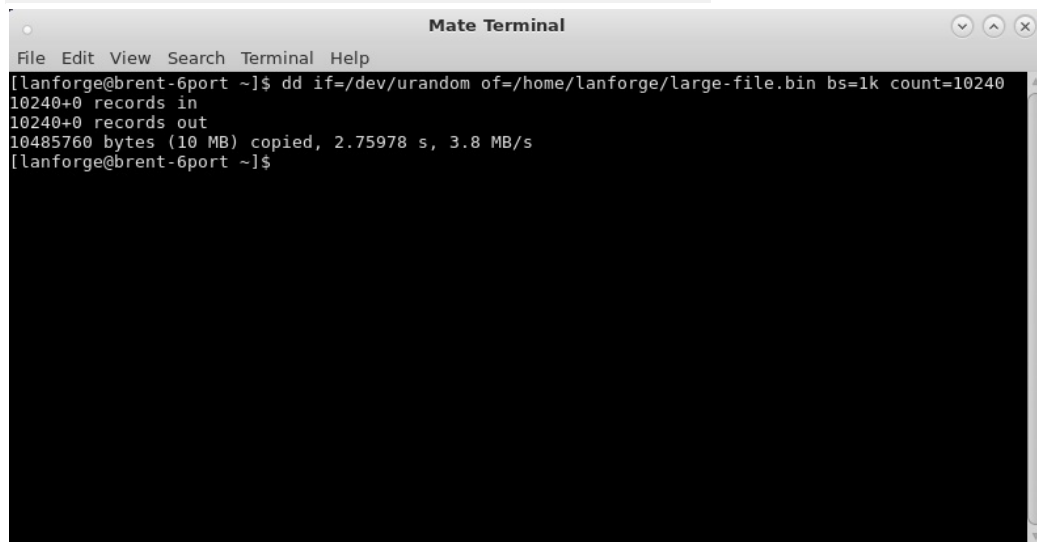


The screenshot shows a terminal window titled "Mate Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal output is as follows:

```
[lanforge@brent-6port ~]$ dd if=/dev/urandom of=/home/lanforge/small-file.bin bs=1k count=44
44+0 records in
44+0 records out
45056 bytes (45 kB) copied, 0.0128558 s, 3.5 MB/s
[lanforge@brent-6port ~]$
```

- B. **Large file (10 MB):**

```
dd if=/dev/urandom of=/home/lanforge/large-file.bin bs=1k count=10240
```

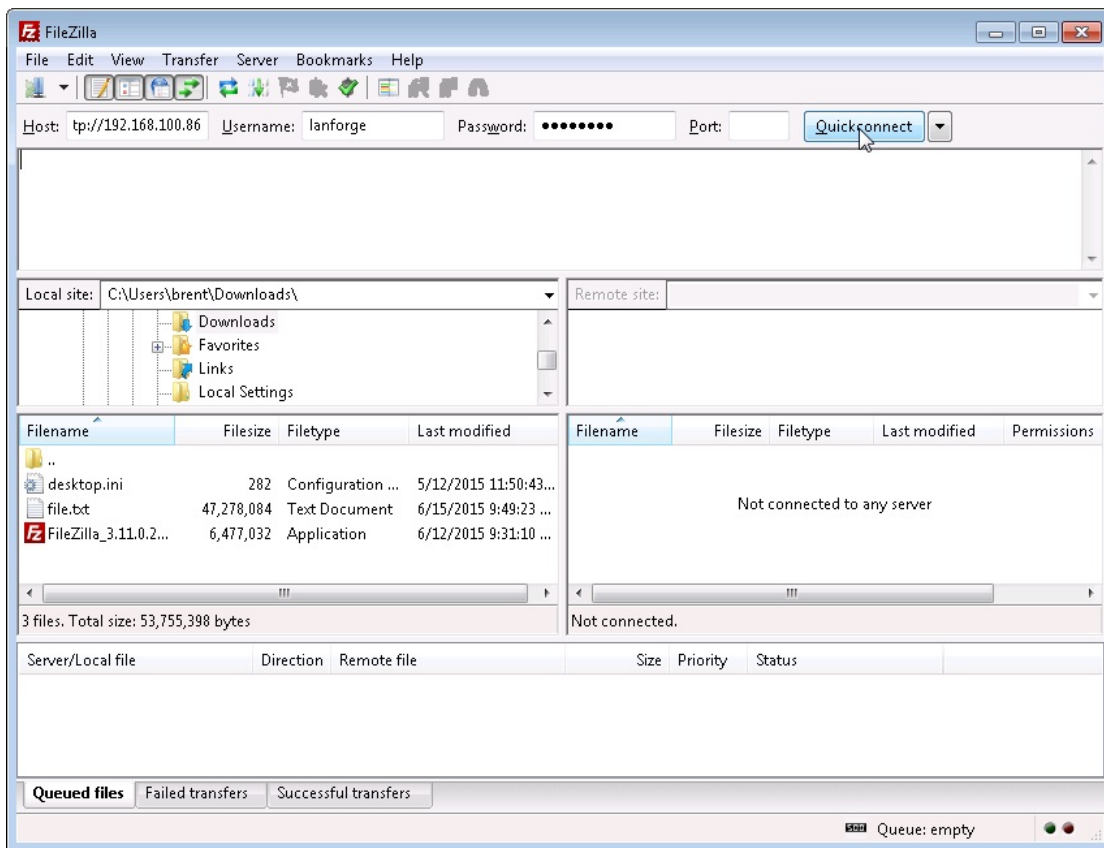


The screenshot shows a terminal window titled "Mate Terminal" with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal output is as follows:

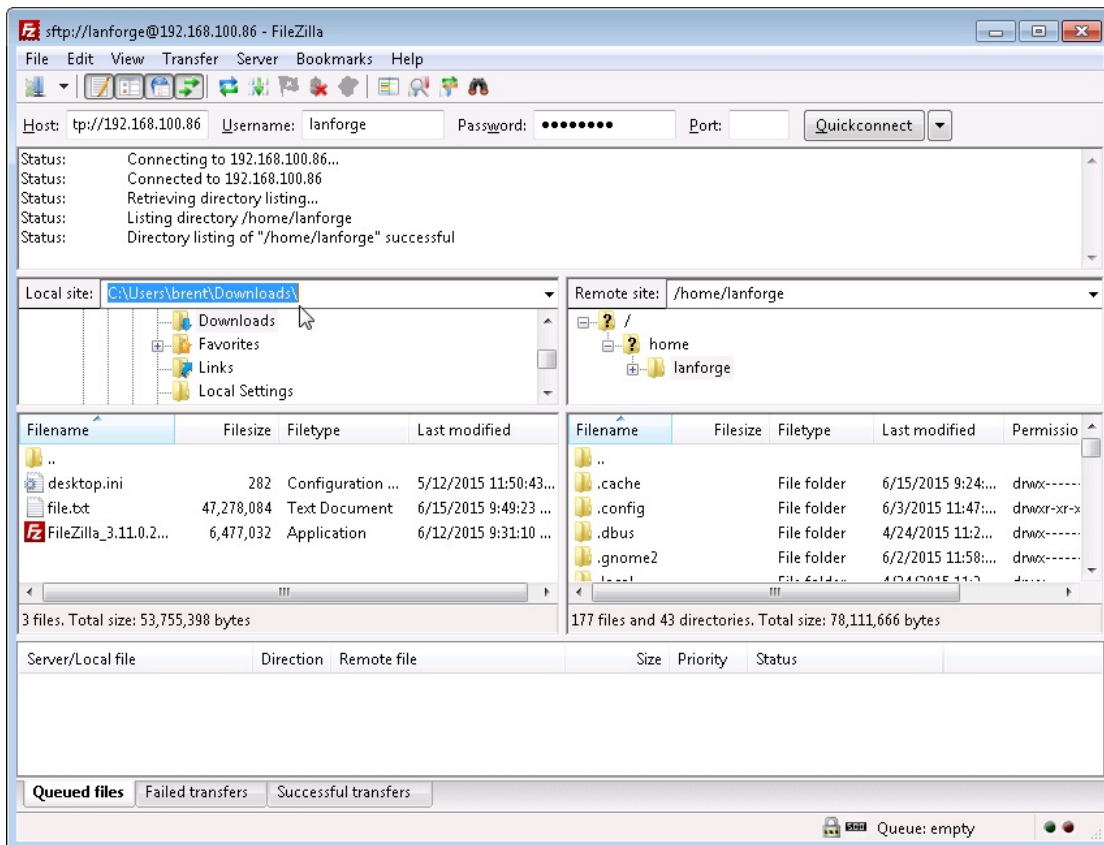
```
[lanforge@brent-6port ~]$ dd if=/dev/urandom of=/home/lanforge/large-file.bin bs=1k count=10240
10240+0 records in
10240+0 records out
10485760 bytes (10 MB) copied, 2.75978 s, 3.8 MB/s
[lanforge@brent-6port ~]$
```

3. **Optional:** Upload a file to the LANforge system for the FTP client to download/upload. There are multiple ways to do this, this step will demonstrate the upload using a Windows machine with FileZilla.

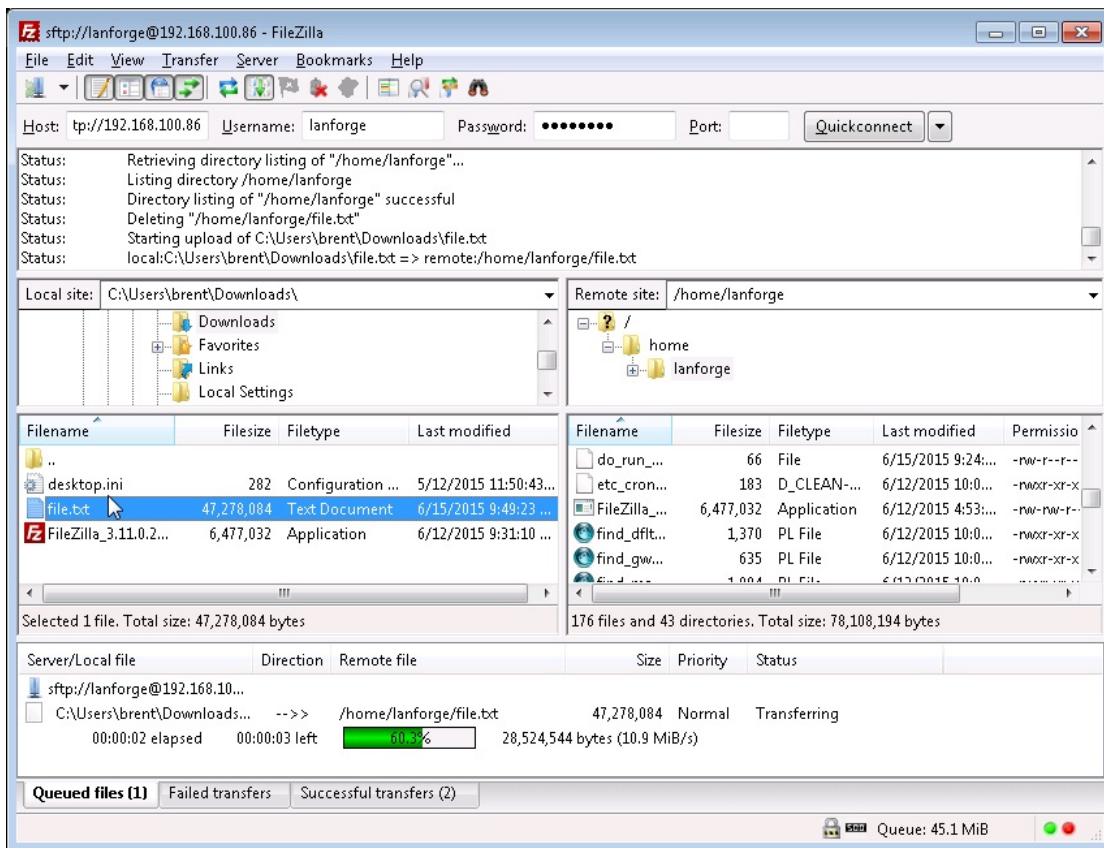
- A. On your Windows machine, download and install FileZilla. You can download the FileZilla client here:  
<https://filezilla-project.org/download.php>
- B. Open FileZilla.



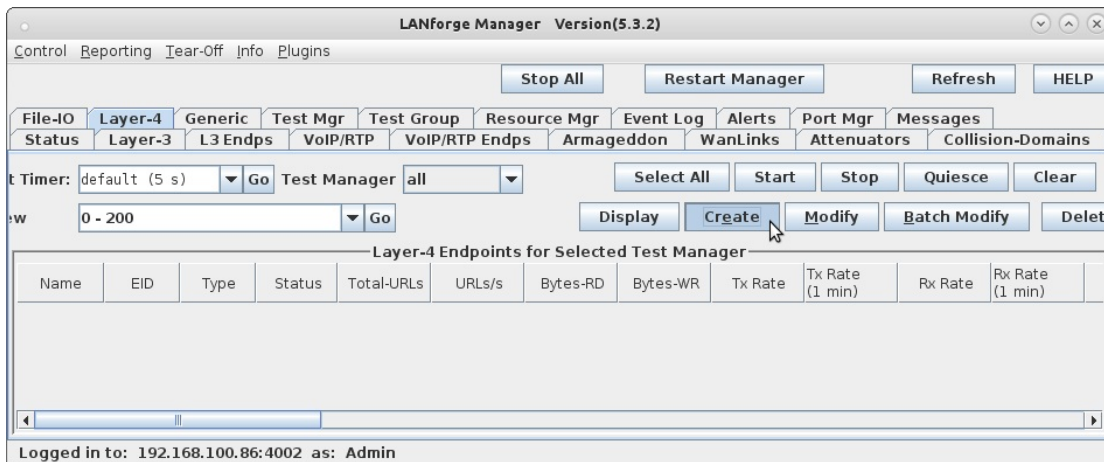
- A. Near the top left in the **Host** field, enter in the following: **sftp://LANforge-IP** (sftp://192.168.100.86 is used in this example).
  - B. Username: **lanforge** Password: **lanforge**.
  - C. Click **Quickconnect**.
- C. In the **left column** navigate to your file's directory. Make sure the right column is set to **/home/lanforge**



- D. To start transferring your file, double click it in the left column. Once the transfer is complete make sure you can find it within the right column under **/home/lanforge**. Your file is now on the LANforge machine!



4. Create the FTP endpoint.
  - A. On the **Layer 4-7** tab, click **Create**.



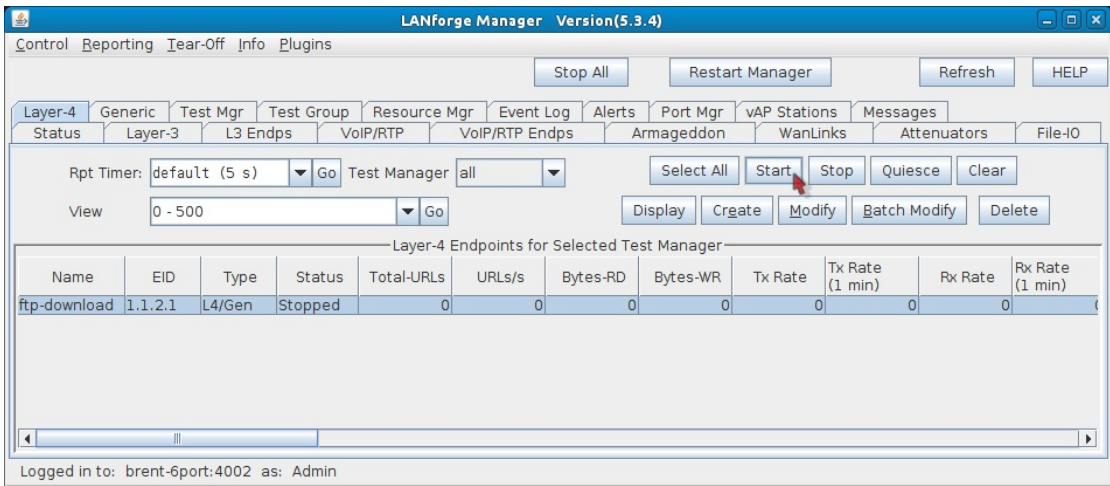
- B. Configure the FTP endpoint.

- A. Name your endpoint **ftp-download**.
- B. Set **Rpt Timer** to **fast (1 s)**
- C. Set **Port** to **eth1**.
- D. Set **URLs per 10m** to **600 (1/sec)**.
  - I. Here is a list of common values used for **URLS per 10m**.

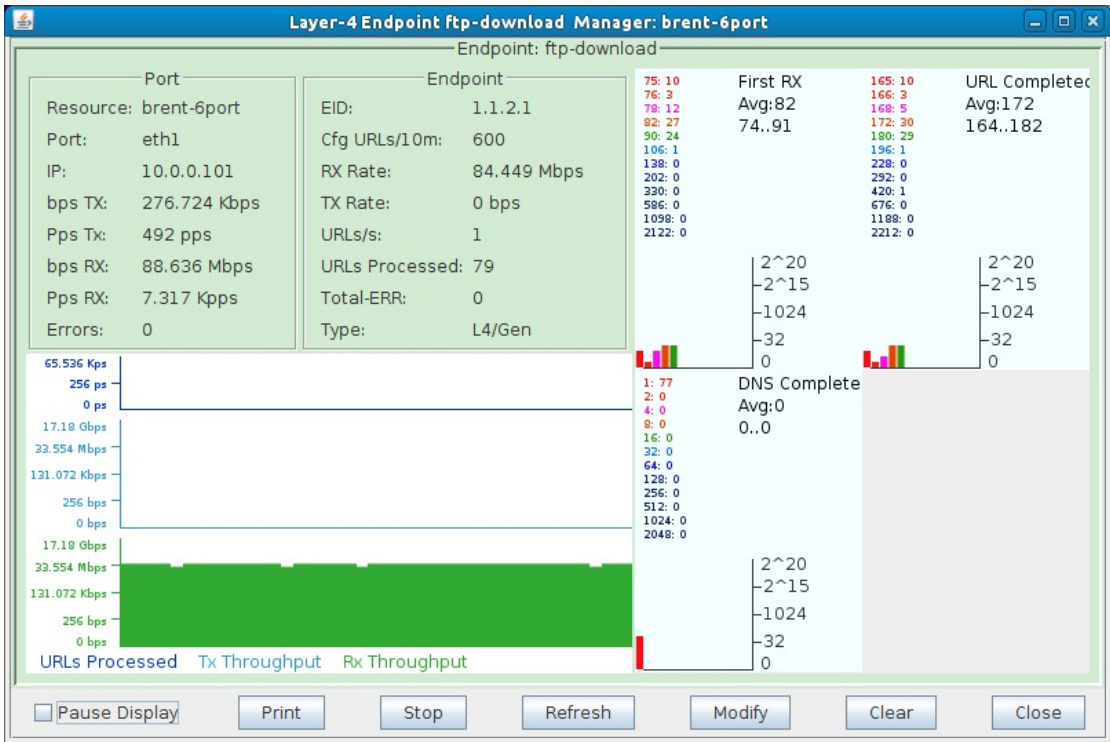
URLs per 10min	Converted
60	1/min
600	1/sec
6000	10/sec
60000	100/sec

- E. To download the small file (44KB) created earlier, set **URL** to:  
**ftp://lanforge:lanforge@10.0.0.102/small-file.bin**  
 To download the large file (10MB) created earlier, set **URL** to:  
**ftp://lanforge:lanforge@10.0.0.102/large-file.bin**  
**Note:** The default directory for FTP is **/home/lanforge** and the default username/password is **lanforge/lanforge**. All files downloaded/uploaded via FTP need to be in **/home/lanforge**.
- F. **Optional:** If you want to use another file in **/home/lanforge** you can just change the filename at the end of the URL.  
 For example **ftp://lanforge:lanforge@10.0.0.102/large-file.bin** would be changed to  
**ftp://lanforge:lanforge@10.0.0.102/your-file-name**
- G. Set **Source/Dest File** to **/dev/null**.
- H. Click **OK**.

5. Start the endpoint and display the graph.
  - A. In the **Layer 4-7** tab, select the connection called **ftp-download**.
  - B. Click **Start**.



C. Select **ftp-download** and click **Display** to see a graph similar to below.



6. **Uploading** a file from the FTP client to the FTP server.

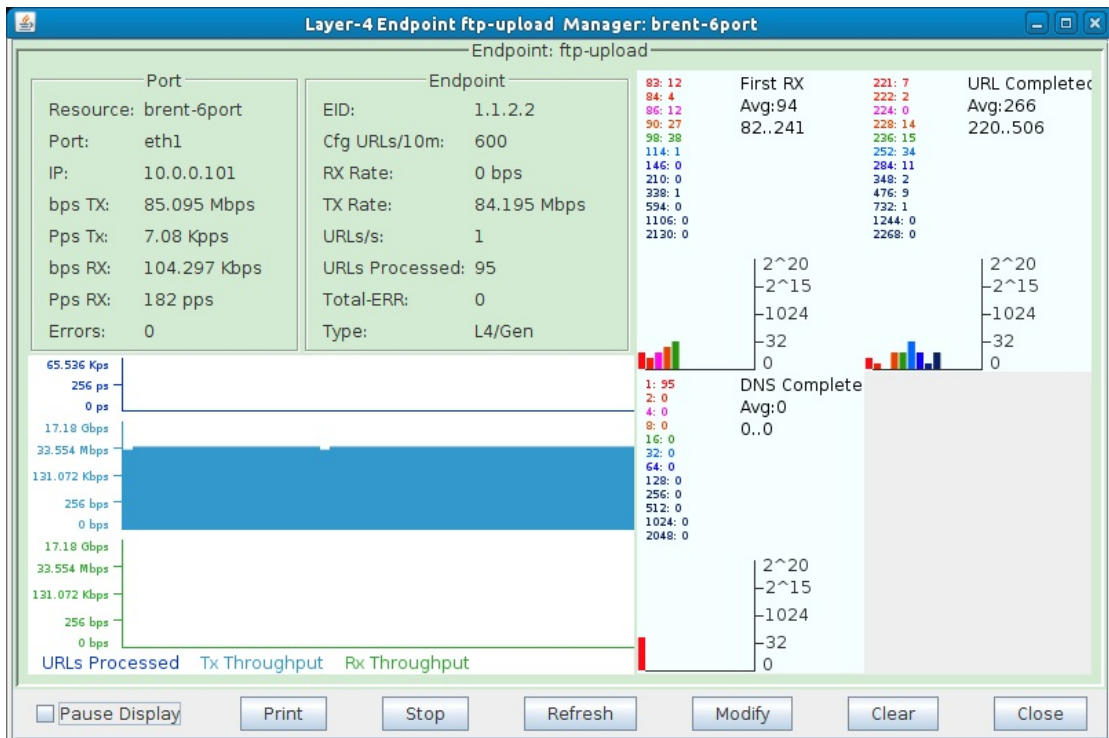


- A. Go to the **Layer 4-7** tab and modify the **ftp-download** endpoint. The below changes will need to be made:

The screenshot shows the 'Create/Modify L4Endpoint' dialog box with the following configuration:

- Name: ftp-upload
- Rpt Timer: fast (1 s)
- Test Manager: default\_tm
- Shelf: 1
- Resource: 1 (brent-6port)
- Port: 2 (eth1)
- IP Addr: AUTO
- Endp Name: 1
- URLs per 10m: 600
- Max Speed: Infinite
- Quiesce: 3 (3 sec)
- URL Timeout: 10000
- DNS Cache Timeout: 60
- TFTP Block Size: Default (512 B)
- Proxy Port: 0
- Proxy Server: (empty)
- Proxy Auth: (empty)
- Proxy Auth Types: Basic, Digest, NTLM (all unchecked)
- HTTP Compression: Gzip, Deflate (both unchecked)
- HTTP Auth Types: Basic, Digest, GSS-Negotiate, NTLM (all unchecked)
- SSL Cert: ca-bundle.crt
- SMTP-From: (empty)
- Agent/RCPT-TO: (empty)
- UL/DL: Upload (selected)
- IPv4: checked, IPv6: unchecked
- URL: ftp://lanforge:lanforge@10.0.0.102/upload-file
- Source/Dest File: large-file.bin
- Get-URLs-From-File: unchecked
- Authenticate Server: unchecked
- Use-Proxy: unchecked
- Allow-Reuse: unchecked
- Allow-Cache: unchecked
- Enable 4XX: unchecked
- Show Headers: unchecked
- Bind DNS: unchecked
- FTP PASV: checked
- FTP EPSV: checked

- Name to **ftp-upload**.
  - UL/DL to **Upload**.
  - URL to **ftp://lanforge:lanforge@10.0.0.102/upload-file**. The 'upload-file' filename in this link can be changed if needed.
  - Source/Dest File to **large-file.bin**. This can be changed to a preferred file as long as it is in **/home/lanforge** (the default FTP directory).
  - Click **OK**.
- B. Select ftp-upload and click **Start**.
- C. This endpoint will now essentially upload the large-file.bin file in **/home/lanforge** to the same directory with a new file name (**upload-file** in this case). If you select **ftp-upload** in the **Layer 4-7** tab and click **Display**, the graph should look similar to the one below.



7. Using **SCP**, **SFTP**, and **TFTP**.

- A. Go to the **Layer 4-7** tab and modify the **ftp-download** endpoint. The below changes will need to be made:

LANforge Manager Version(5.3.4)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations Messages

Status Layer-3 L3 Endps VolP/RTP VolP/RTP Endps Armageddon WanLinks Attenuators File-I/O

Rpt Timer: default (5 s) Go Test Manager all Select All Start Stop Quiesce Clear

View 0 - 500 Go Display Create Modify Batch Modify Delete

Layer-4 Endpoints for Selected Test Manager

Name	EID	Type	Status	Total-URLs	URLs/s	Bytes-RD	Bytes-WR	Tx Rate	Tx Rate (1 min)	Rx Rate	Rx Rate (1 min)
ftp-download	1.1.2.1	L4/Gen	Stopped	138	0	1,447,034...	0	0	0	82,824,960	0
ftp-upload	1.1.2.2	L4/Gen	Stopped	162	0	0	1,698,693...	83,322,368	0	0	0

Logged in to: brent-6port:4002 as: Admin

- A. **Name** to **ftp-scp** for scp or **ftp-sftp** for sftp.
- B. For **SCP**, set the **URL** to **scp://lanforge:lanforge@10.0.0.102/~small-file.bin**. The filename at the end of the link can be changed to another file in **/home/lanforge**.

Create/Modify L4Endpoint

Name: ftp-scp Rpt Timer: fast (1 s) Test Manager: default\_tm

Shelf: 1 Resource: 1 (brent-6port) Port: 2 (eth1) IP Addr: AUTO

Endp Name: 1 URLs per 10m: 600 Max Speed: Infinite

Quiesce: 3 (3 sec) URL Timeout: 10000 DNS Cache Timeout: 60

TFTP Block Size: Default (512 B)

Proxy Port: 0 Proxy Server:

Proxy Auth:

Proxy Auth Types:  Basic  Digest  NTLM

HTTP Compression:  Gzip  Deflate

HTTP Auth Types:  Basic  Digest  GSS-Negotiate  NTLM

SSL Cert: ca-bundle.crt

SMTP-From:

Agent/RCPT-TO:

UL/DL: Download  IPv4  IPv6

URL: scp://lanforge:lanforge@10.0.0.102/~small-file.bin

Source/Dest File: /dev/null

Get-URLs-From-File  Authenticate Server  Use-Proxy  Allow-Reuse  Allow-Cache  Enable 4XX  Show Headers

Bind DNS  FTP PASV  FTP EPSV

Apply OK Batch-Create Cancel

- C. Click **OK**.
- D. For **SFTP**, set the **URL** to **sftp://lanforge:lanforge@10.0.0.102/~small-file.bin**. The filename at the end of the link can be changed to another file in **/home/lanforge**.

E. Click **OK**.

B. Select the **ftp-scp** or **ftp-sftp** endpoint and click **Start**.

C. To use **TFTP**, you will first need to have a TFTP server set up and configured to serve the Layer 4-7 endpoint a file.

A. Once the server is set up, use the below configuration to set up a TFTP endpoint.

**Note:** You will need to provide your own server's IP and file name.

I. Set the **Port** to a port that can talk to the TFTP server. In this case the server was on the management network so eth0 was used.

II. **URLs per 10m** was left at the default **100**, this can be set higher or lower depending on how often the file should be downloaded.

III. Set **URL** to **fttp://server-IP/filename**.

IV. **Source/Dest File** can be **/dev/null**.

