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Candela
TECHNOLOGIES

Network Testing and Emulation Solutions

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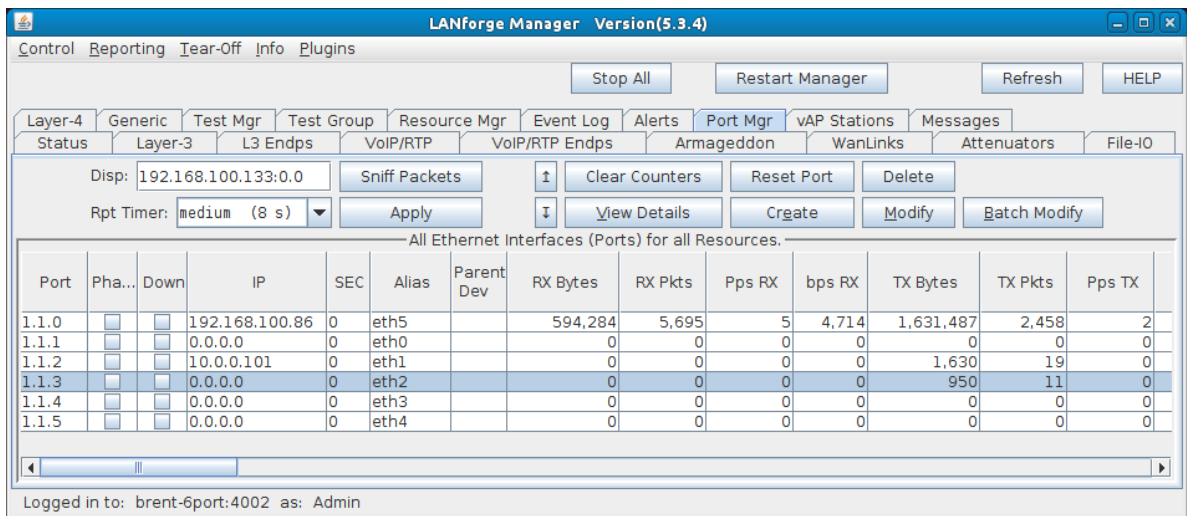   A. Go to the **Port Mgr** tab and select eth1.
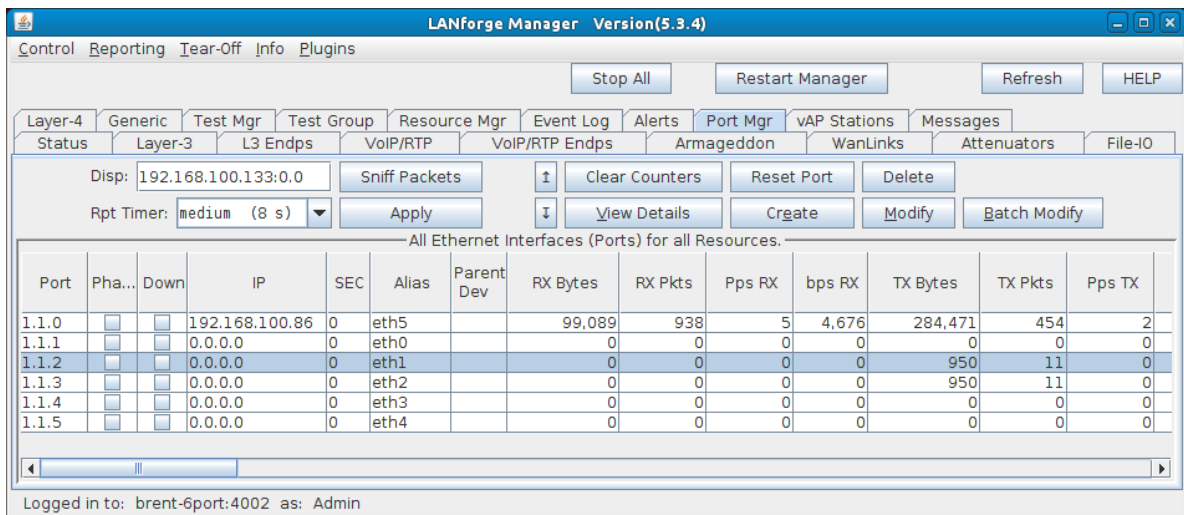
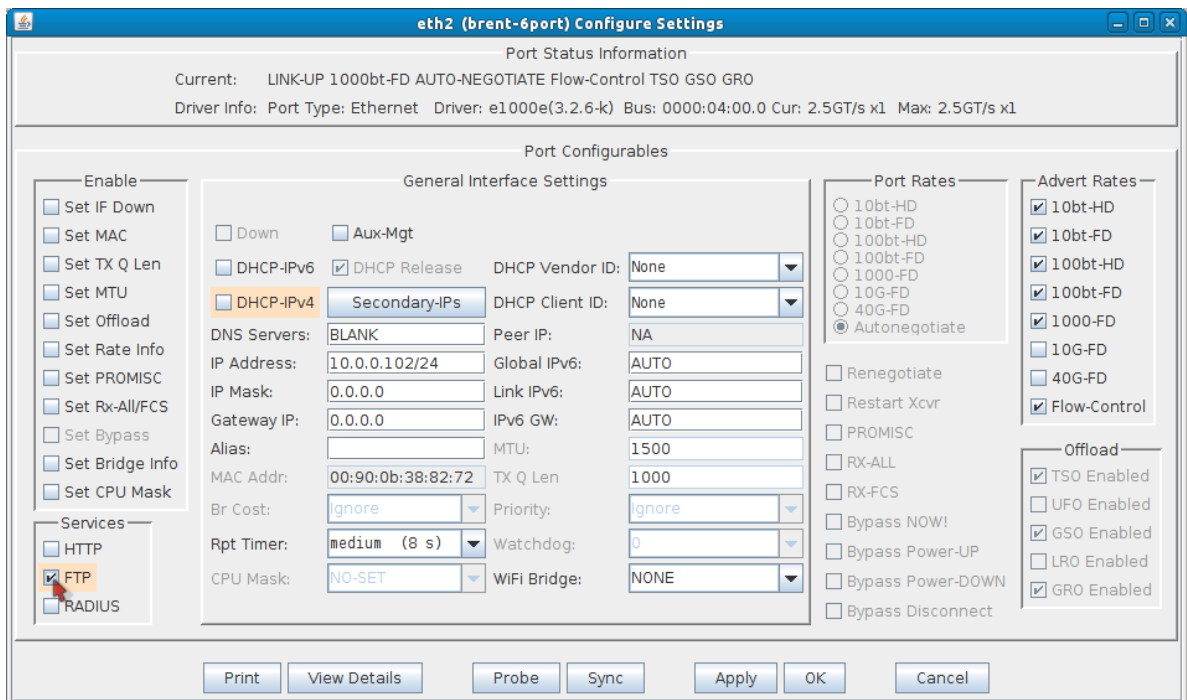

   B. Click **Modify** to configure port eth1.
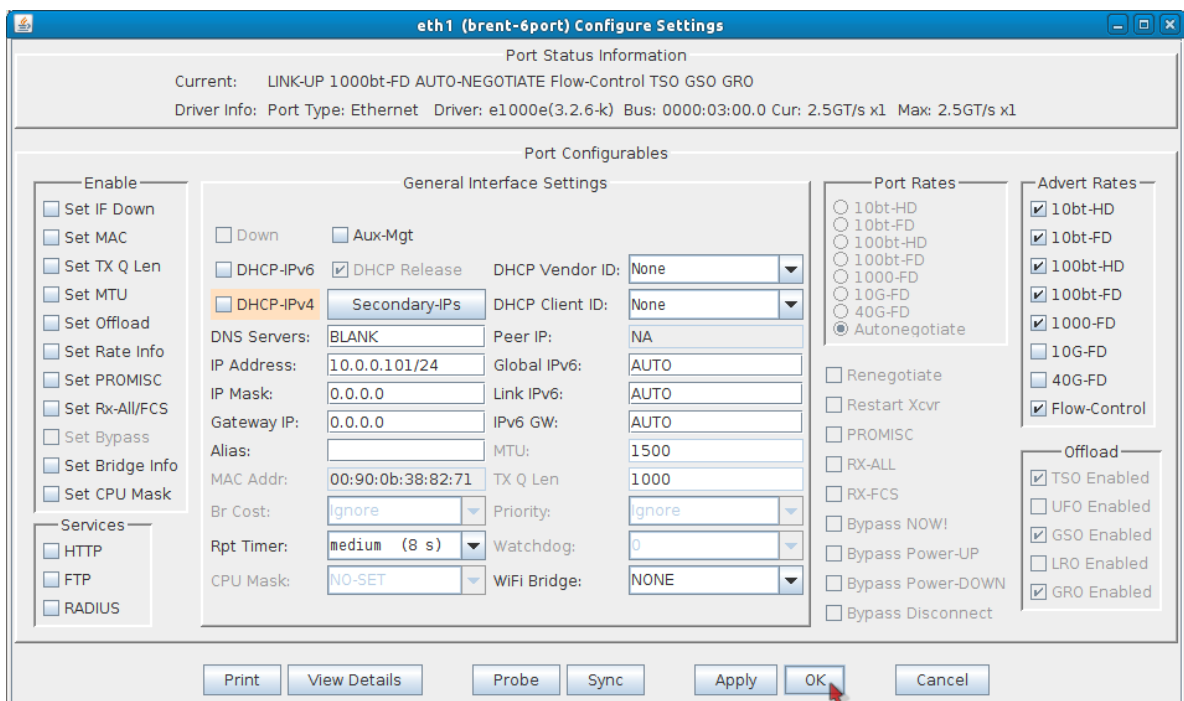
   A. Set the IP Address to `10.0.0.101/24`.
   B. Click **OK**.

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

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

A. Set the IP Address to `10.0.0.102/24`.

B. Enable **FTP** under **Services**.

C. Click **OK**.

2. 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
```
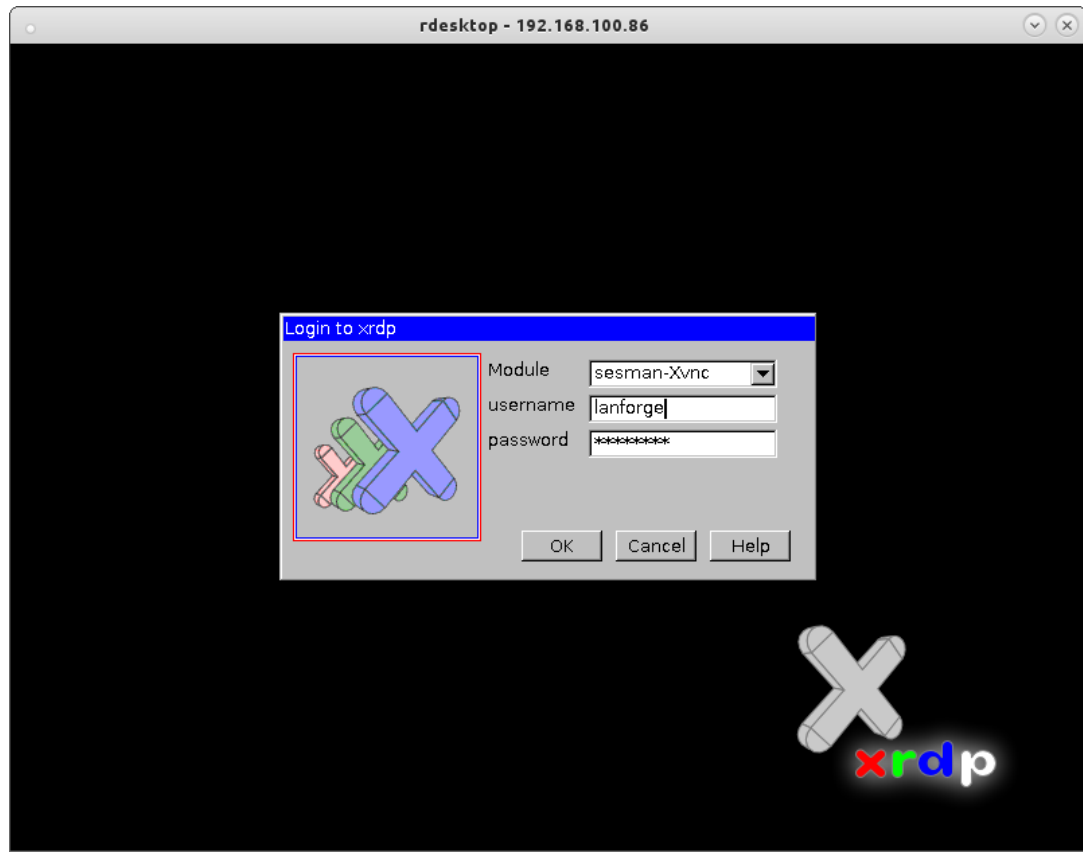

    C. Log in with user/password **lanforge/lanforge**.

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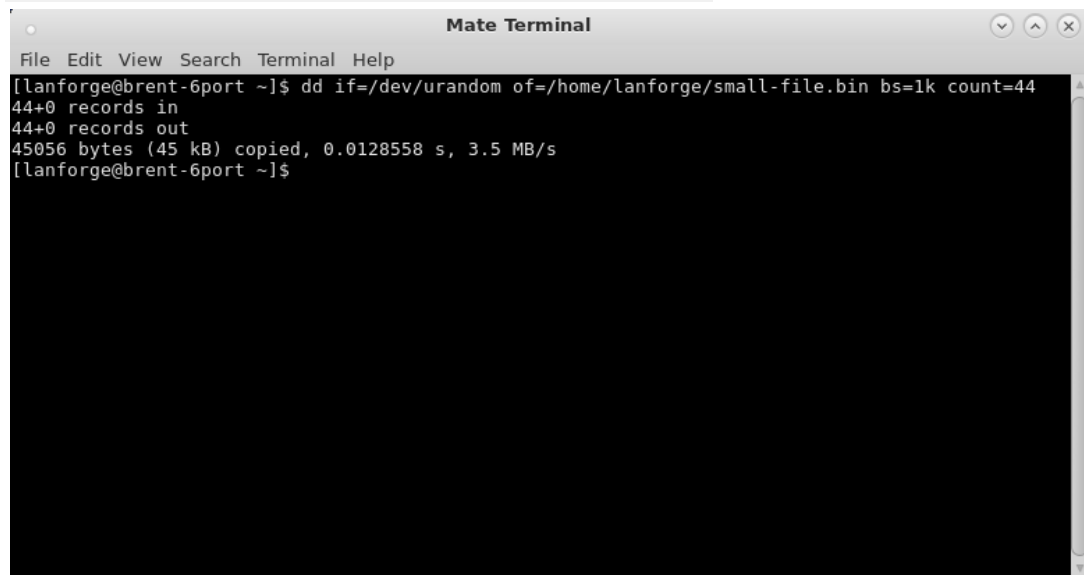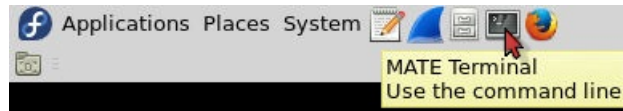
B. Once you have a console ready, use the below commands to create a small or large file. These files will just contain random text.

   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
   ```
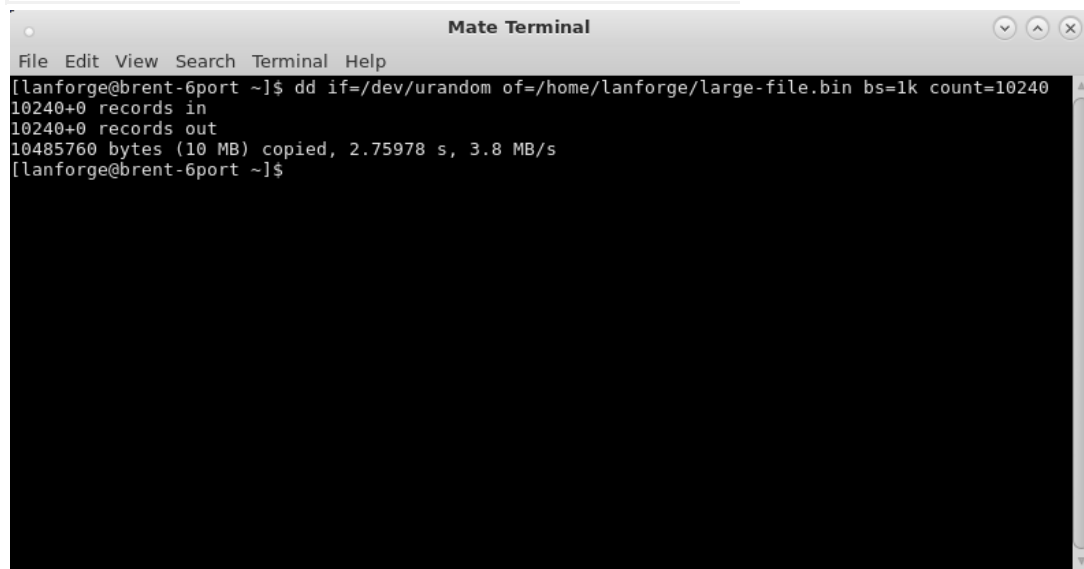


   ```
   [lanforge@brent-6port ~]$ dd if=/dev/urandom of=/home/lanforge/small-file.bin bs=1k count=44
   44+0 records in
   44+0 records out
   45056 bytes (45 kB) copied, 0.0128558 s, 3.5 MB/s
   [lanforge@brent-6port ~]$
   ```

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

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



   ```
   [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.
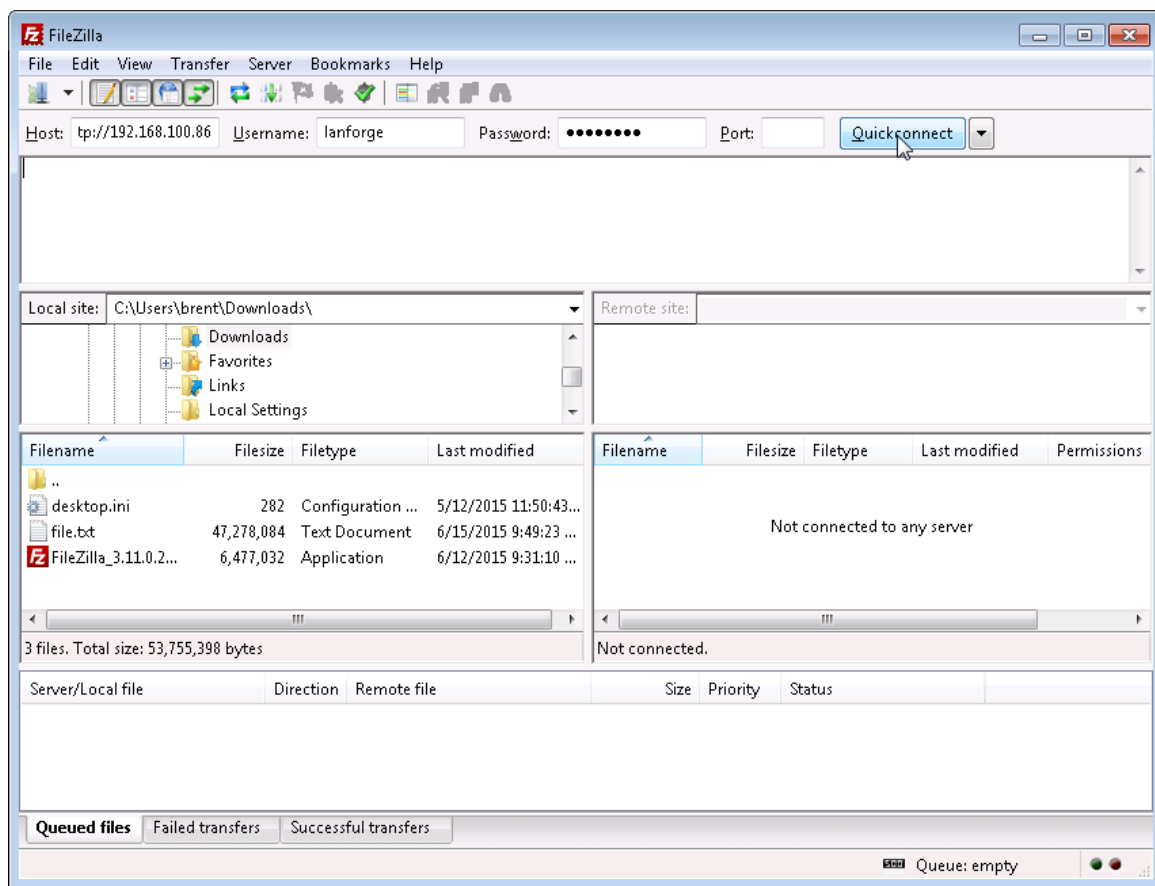
A. Near the top left in the **Host** field, enter in the following: `sftp://LANforge-IP` (sftp://192.168.100.86 is used in this example).

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`
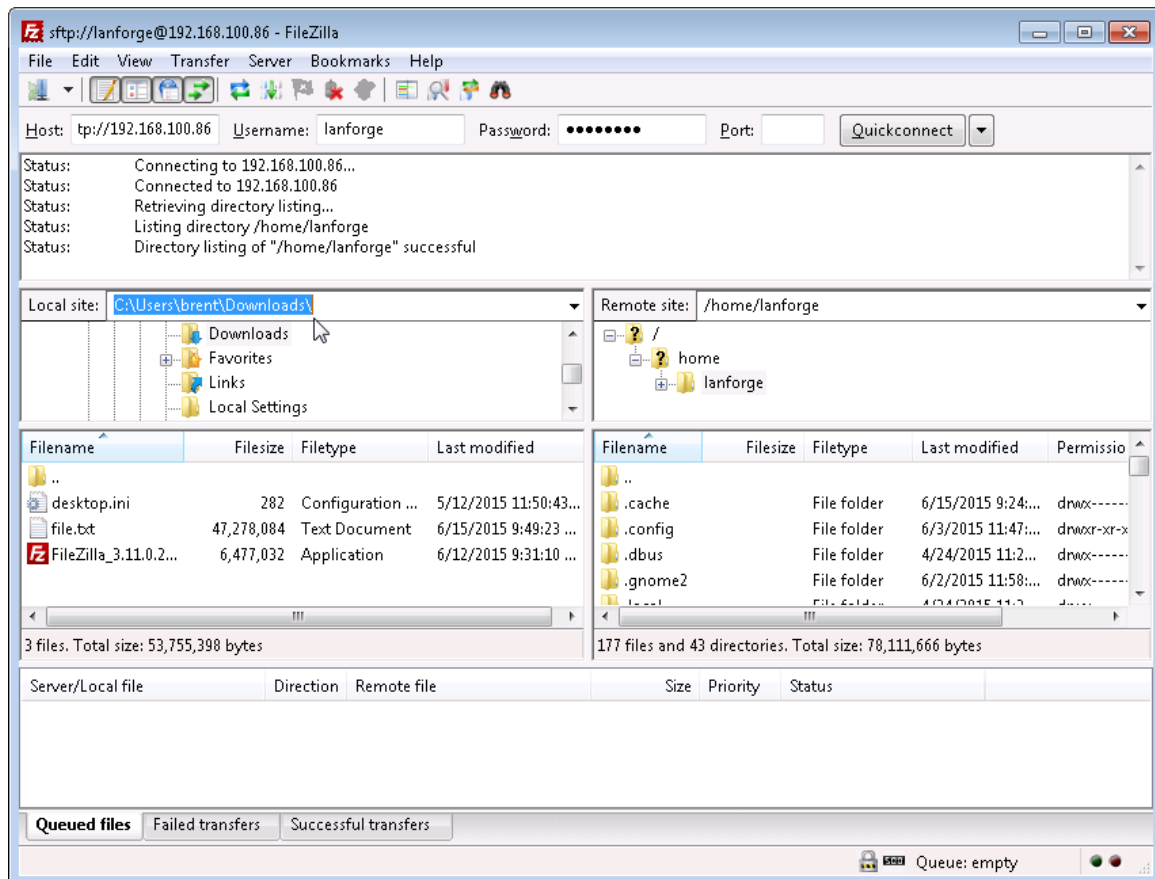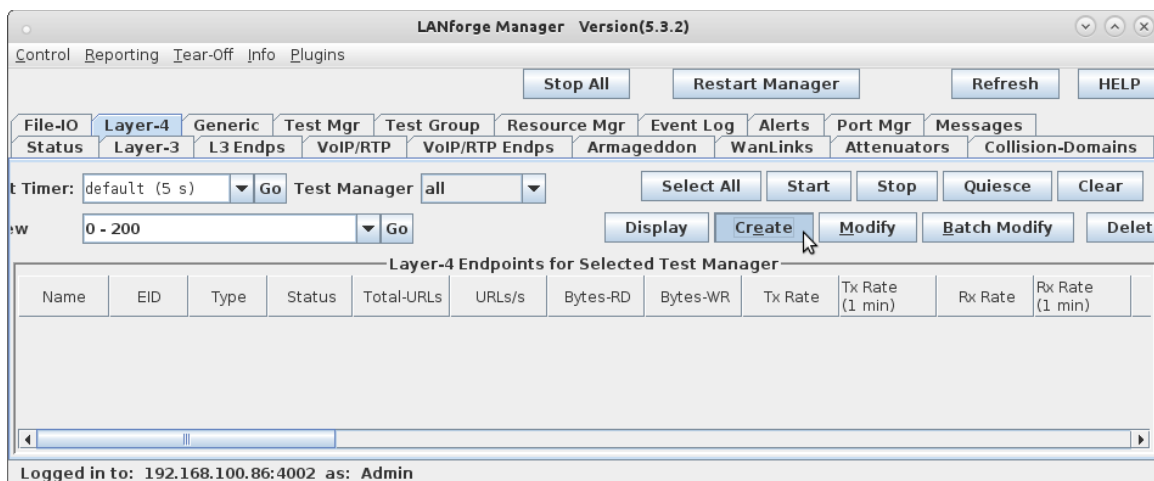

D. To start transferring your file, double click it in the left column. Once the transfer is complete make sure you

can find it within the right column under `/home/lanforge`. Your file is now on the LANforge machine!
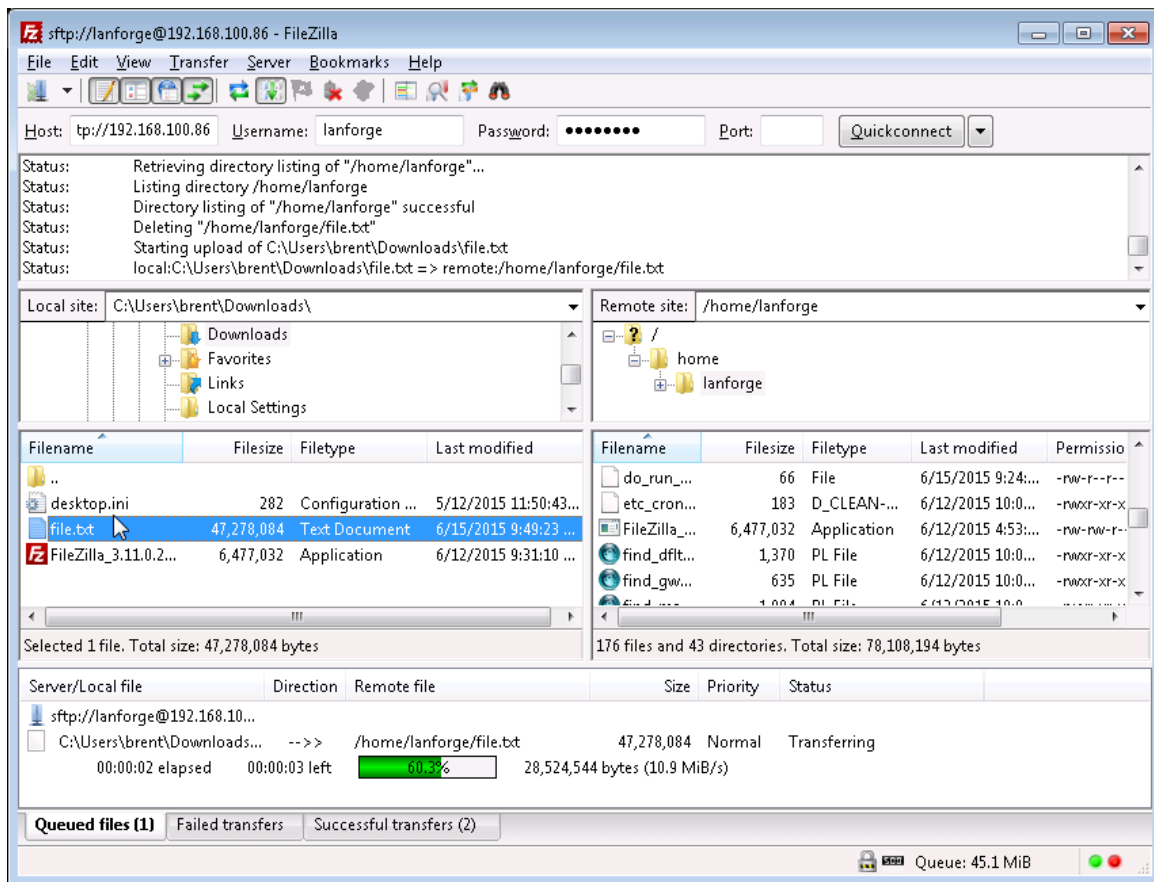
4. Create the FTP endpoint.
    A. On the **Layer 4-7** tab, click **Create**.
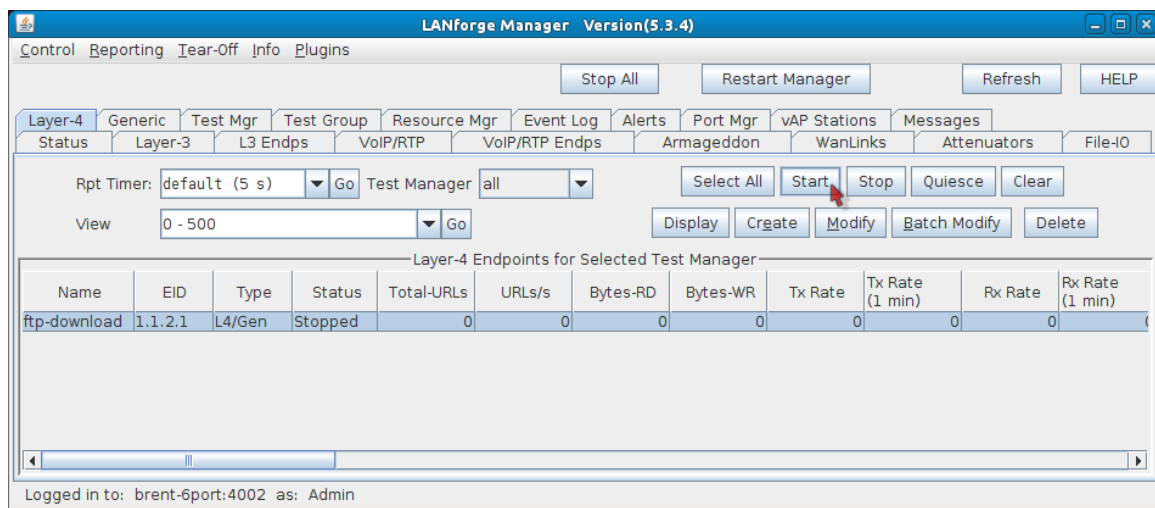

    B. Configure the FTP endpoint.

Create/Modify L4Endpoint

Name:	ftp-download	Rpt Timer:	fast (1 s)	Test Manager:	default_tm
Shelf: 1	Resource: 1 (brent-6port)	Port: 2 (eth1)	IP Addr: AUTO
Endp Name: 0	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: ftp://lanforge:lanforge@10.0.0.102/large-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

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**.

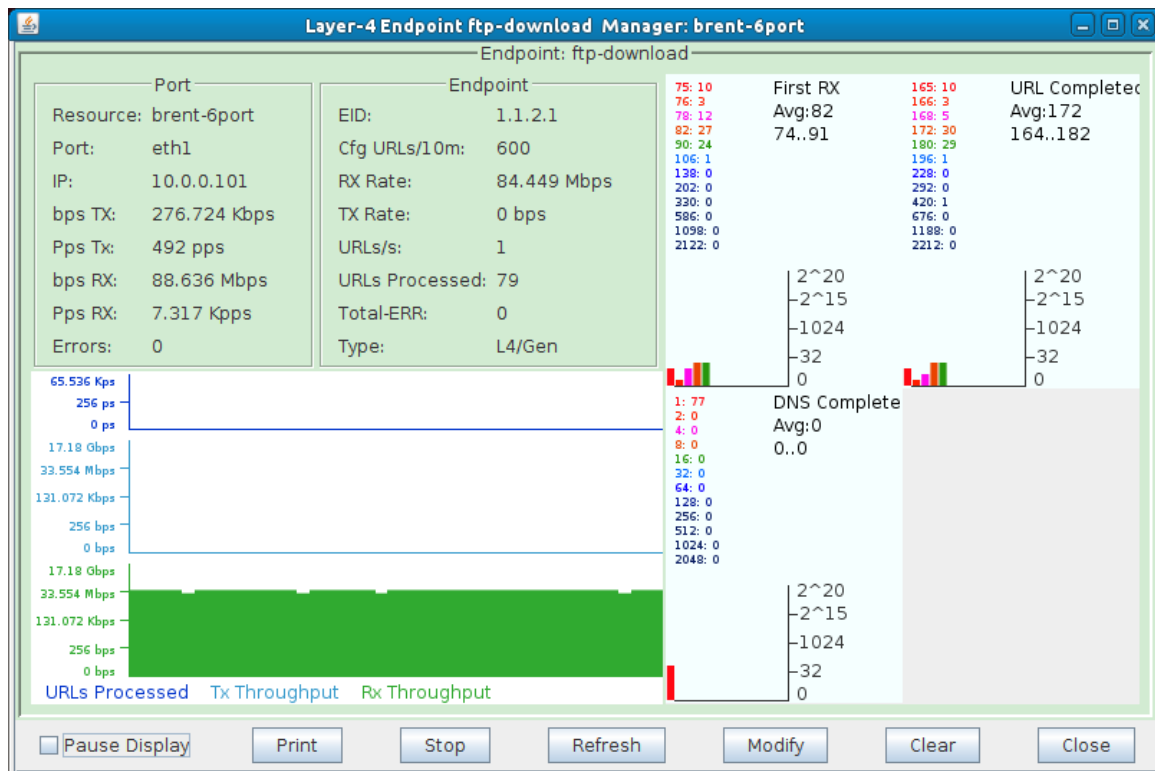| URLs per 10min	Converted
60	1/min
600	1/sec
6000	10/sec
60000	100/sec

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.

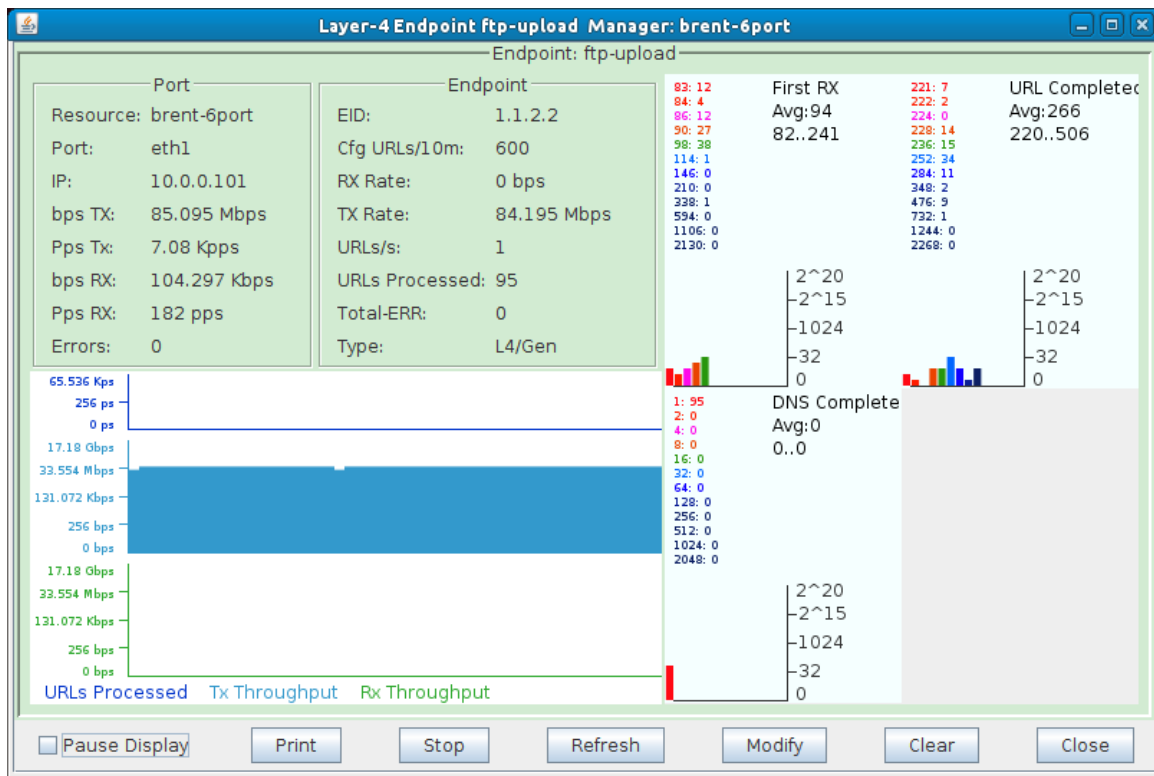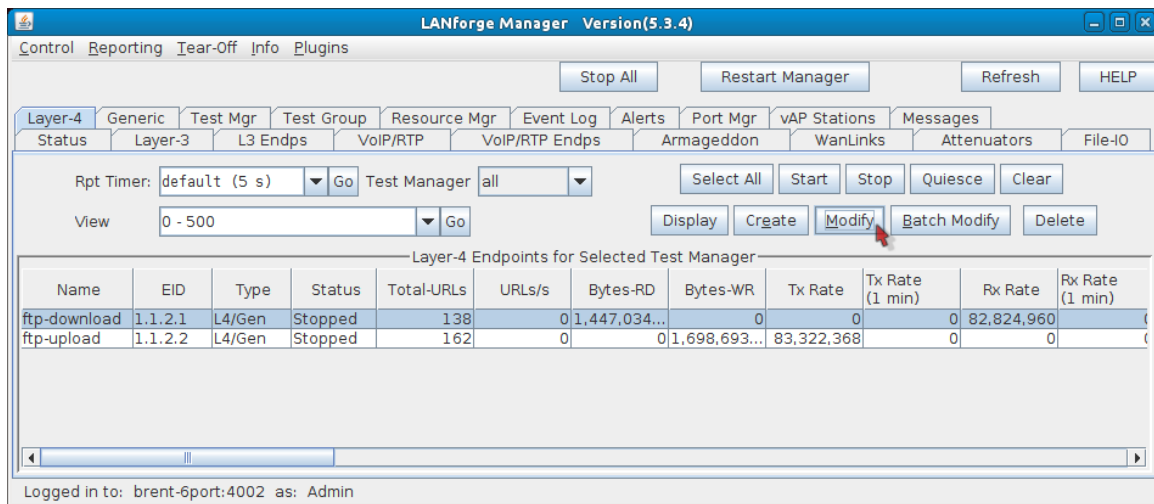C. Select **ftp-download** and click **Display** to see a graph similar to below.

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:

A. **Name** to **ftp-upload**.

B. **UL/DL** to **Upload**.

C. **URL** to **ftp://lanforge:lanforge@10.0.0.102/upload-file**. The 'upload-file' filename in this link can be changed if needed.

D. **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).

E. 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:

   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`.

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 **tftp://**`server-IP`**/**`filename`.

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