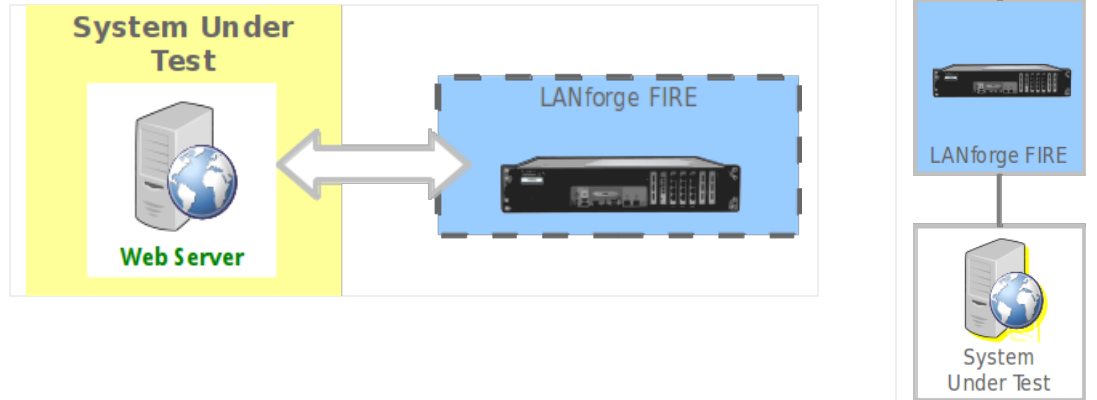


## Generating Traffic to a Web Server

**Goal:** Set up and run traffic to a web server.

In this test scenario, LANforge-FIRE is used to generate traffic in the form of URL requests in order to determine the maximum number of URLs/second the web server can process.

Please note that the web server used in this example is an isolated Linux system running Apache.



1. Connect one LANforge-FIRE port to the web server's network.
2. Set up the LANforge port so that it has a valid IP address.
  - A. Go to the Port Manager

**LANforge Manager Version(5.3.6)**

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 VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO

Disp: 192.168.100.239:0 Sniff Packets Clear Counters Reset Port Delete

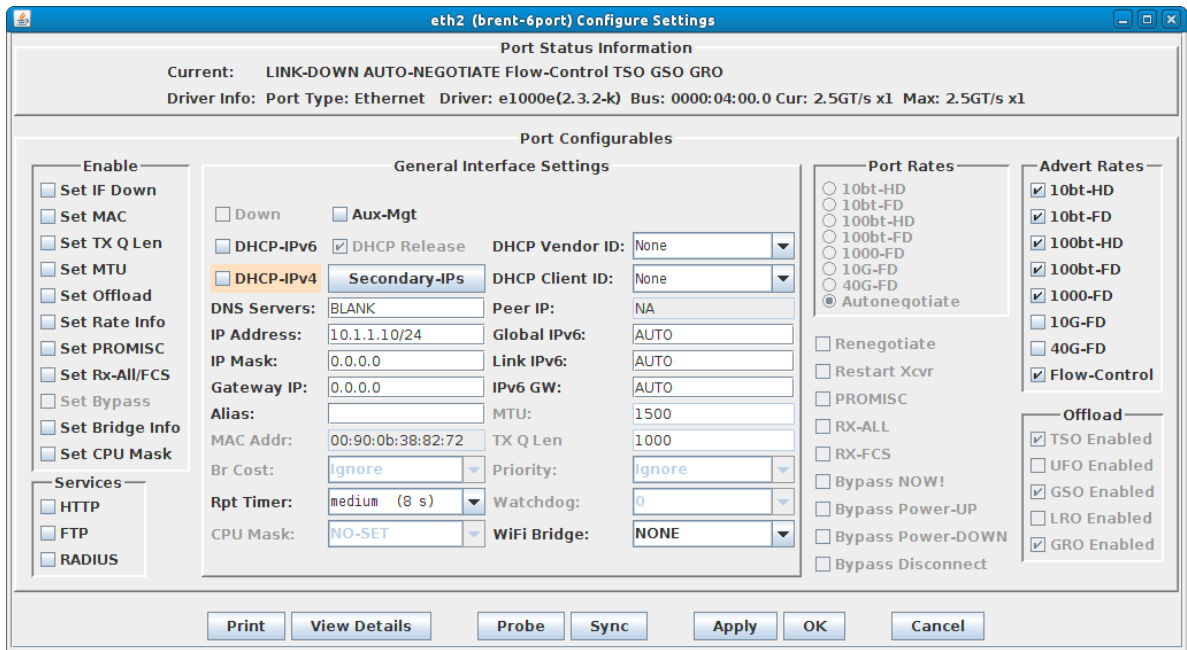
Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

Port	Pha...	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX
1.1.0			192.168.100.103	0	eth0		49,388	412	4	4,192	184,397	233	2
1.1.1			0.0.0.0	0	eth1		0	0	0	0	0	0	0
1.1.2			0.0.0.0	0	eth2		0	0	0	0	70	1	0
1.1.3			0.0.0.0	0	eth3		70	1	0	5	0	0	0
1.1.4			0.0.0.0	0	eth4		70	1	0	5	0	0	0
1.1.5			0.0.0.0	0	eth5		0	0	0	0	70	1	0

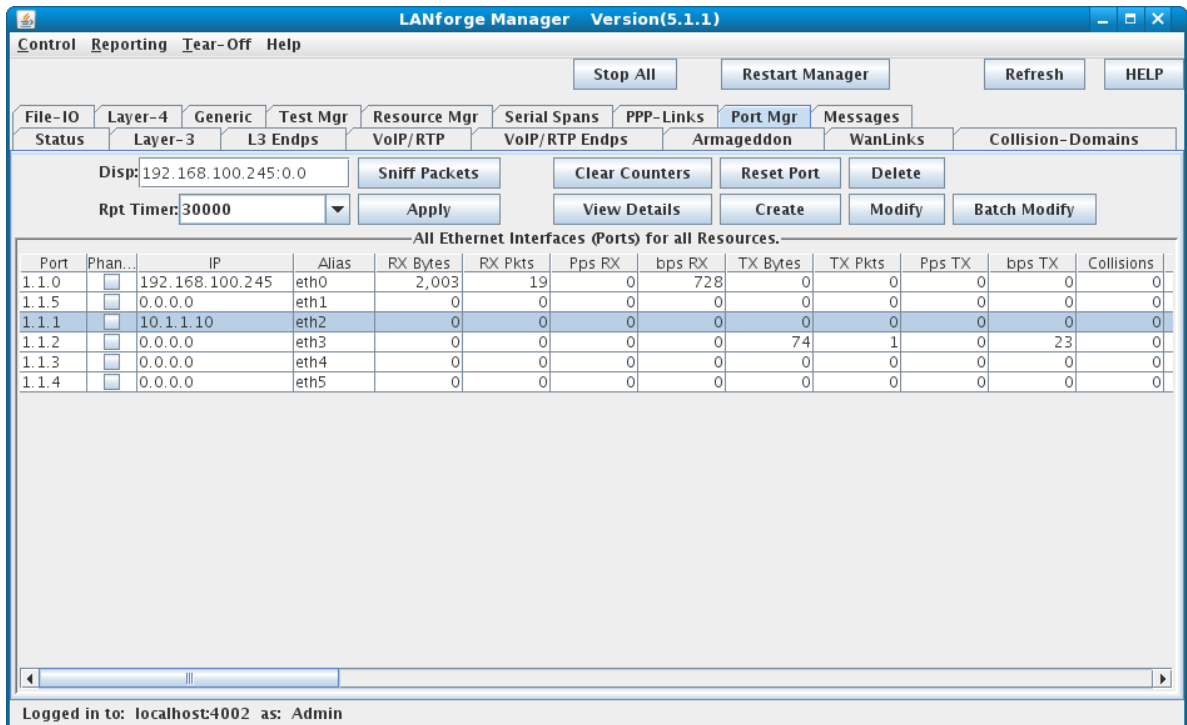
Logged in to: 192.168.100.103:4002 as: Admin

B. Modify the port connected to the web server. Set a valid network IP address and Gateway IP.



The screenshot shows the 'eth2 (brent-6port) Configure Settings' window. The 'Port Status Information' section indicates the current state is 'LINK-DOWN AUTO-NEGOTIATE Flow-Control TSO GSO GRO' and provides driver details. The 'Port Configurables' section is divided into 'General Interface Settings', 'Port Rates', and 'Advert Rates'. Under 'General Interface Settings', the 'DHCP-IPv4' tab is active, showing fields for IP Address (10.1.1.10/24), IP Mask (0.0.0.0), Gateway IP (0.0.0.0), and others. The 'Port Rates' section has 'Autonegotiate' selected. The 'Advert Rates' section has several options checked, including '100bt-FD' and 'Flow-Control'. A 'Services' list on the left includes HTTP, FTP, and RADIUS. At the bottom are buttons for 'Print', 'View Details', 'Probe', 'Sync', 'Apply', 'OK', and 'Cancel'.

C. Verify the port configuration



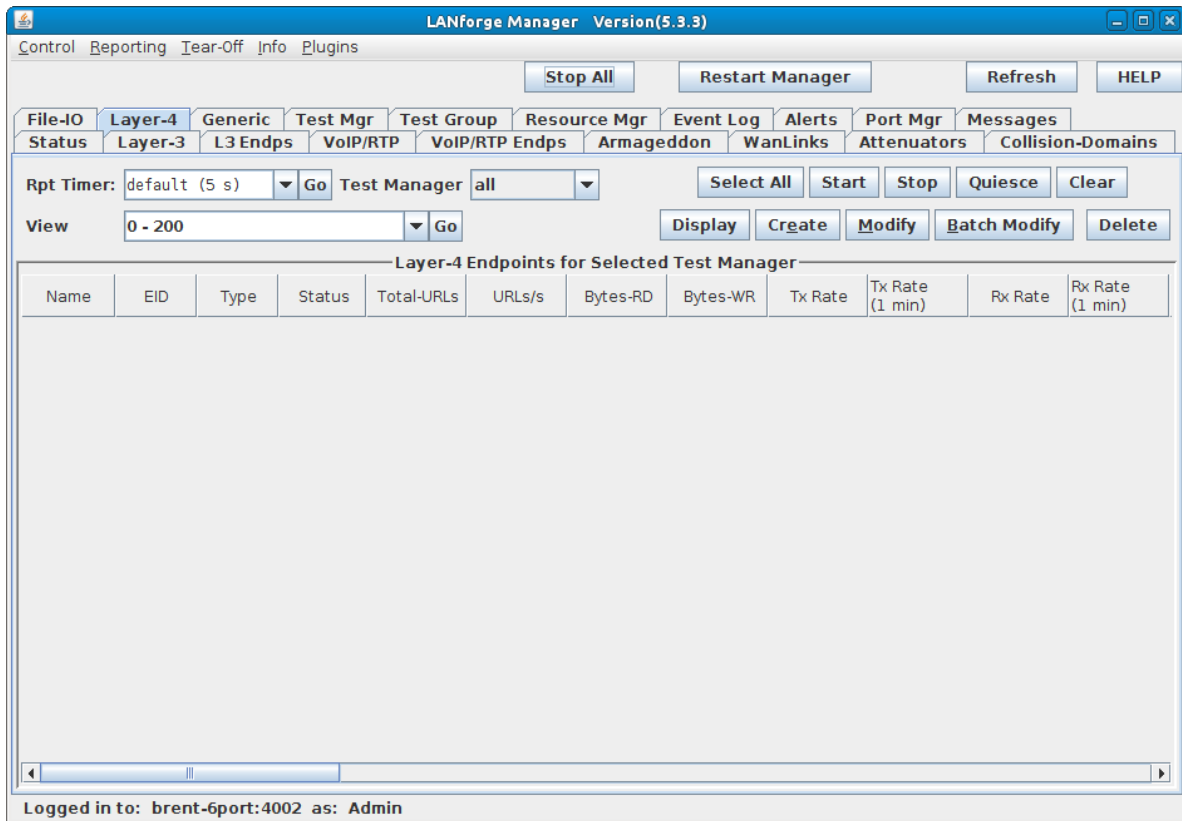
The screenshot shows the 'LANforge Manager Version(5.1.1)' interface. It features a menu bar (Control, Reporting, Tear-Off, Help) and a toolbar with buttons like 'Stop All', 'Restart Manager', 'Refresh', and 'HELP'. Below the toolbar are tabs for various management functions: File-IO, Layer-4, Generic, Test Mgr, Resource Mgr, Serial Spans, PPP-Links, Port Mgr, Messages, Status, Layer-3, L3 Endps, VoIP/RTP, VoIP/RTP Endps, Armageddon, WanLinks, and Collision-Domains. The 'Port Mgr' tab is active, displaying a table of Ethernet interfaces. The table has columns for Port, Phan..., IP, Alias, RX Bytes, RX Pkts, Pps RX, bps RX, TX Bytes, TX Pkts, Pps TX, bps TX, and Collisions. The data shows several interfaces, with 'eth2' (IP 10.1.1.10) being the focus of the configuration in the previous step. At the bottom, a status bar indicates 'Logged in to: localhost:4002 as: Admin'.

Port	Phan...	IP	Alias	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX	Collisions
1.1.0		192.168.100.245	eth0	2,003	19	0	728	0	0	0	0	0
1.1.5		0.0.0.0	eth1	0	0	0	0	0	0	0	0	0
1.1.1		10.1.1.10	eth2	0	0	0	0	0	0	0	0	0
1.1.2		0.0.0.0	eth3	0	0	0	0	74	1	0	23	0
1.1.3		0.0.0.0	eth4	0	0	0	0	0	0	0	0	0
1.1.4		0.0.0.0	eth5	0	0	0	0	0	0	0	0	0

For more information see [LANforge User's Guide: Ports \(Interfaces\)](#)

3. Set up the URL requests.

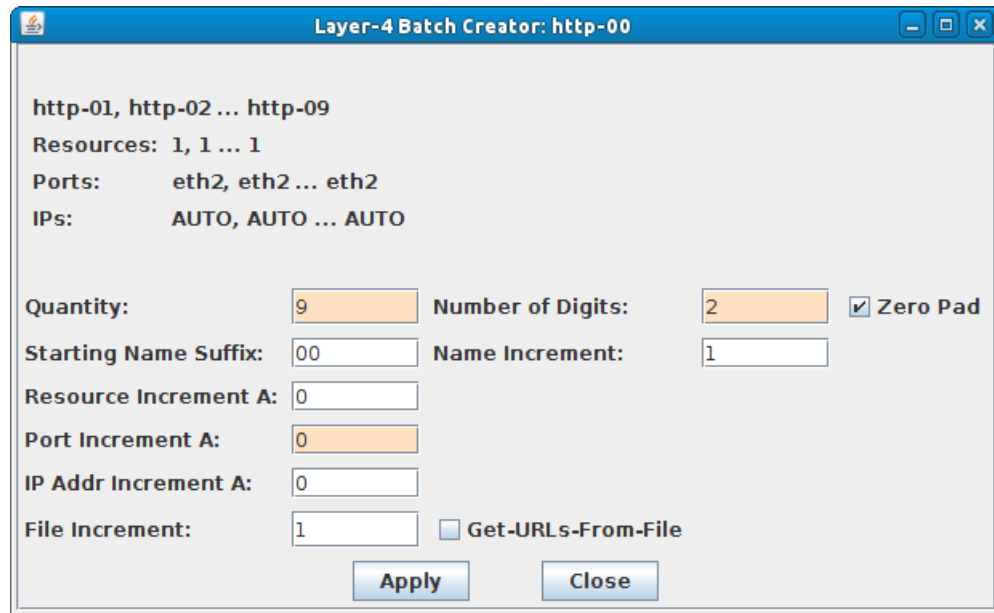
A. Go to the **Layer 4-7** tab



B. Create a Layer 4-7 Endpoint:

- Enter a name and select the port configured in the previous step
- URLs per 10m should be set to around 1,200,000 which is 2,000 URLs/second
- Leave the SSL Cert alone as we are not using it in this example
- UL/DL should be set to Download
- URL should be set to the web server's IP address and file that you wish to download. In this example, index.html is a small test file.
- File is the designated location that the downloaded file will be stored. In this example, we use /dev/null which will essentially throw the file away so that it does not slow down the LANforge system with writing files.
- Select the 'Allow-Reuse' checkbox to maximize the number of URL requests LANforge can make per connection
- Click **Apply** or **OK** to create the Layer 4-7 endpoint

- C. Create 9 more Layer 4-7 endpoints by opening the previously created endpoint and clicking **Batch-Create**



The screenshot shows a window titled "Layer-4 Batch Creator: http-00". Inside the window, the following information is displayed:

- Endpoint names: http-01, http-02 ... http-09
- Resources: 1, 1 ... 1
- Ports: eth2, eth2 ... eth2
- IPs: AUTO, AUTO ... AUTO

Below this information are several input fields and checkboxes:

- Quantity:** 9
- Number of Digits:** 2
- ☒ **Zero Pad**
- Starting Name Suffix:** 00
- Name Increment:** 1
- Resource Increment A:** 0
- Port Increment A:** 0
- IP Addr Increment A:** 0
- File Increment:** 1
- ☐ **Get-URLs-From-File**

At the bottom of the dialog are two buttons: **Apply** and **Close**.

- A. Set the **Quantity** to 9, **Number of Digits** to 2, and **Port Increment A** to 0. Then click **Apply**.
- B. Each of the 10 Layer 4-7 Endpoints will attempt to generate 2000 URLs/second, effectively generating 20,000 URLs/second

For more information see [LANforge User's Guide: Layer 4-7 Endpoints](#)

4. Run traffic and determine web server performance.

- A. On the **Layer 4-7** tab, select one Layer 4-7 endpoint, click **Start**, then repeat for all 10 Layer 4-7 endpoints:

LANforge Manager Version(5.3.3)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-I/O Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains

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

View 0 - 200 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)
http-00	1.1.5.13	L4/Gen	Run	24,390	1,470.871	4,992,000	0	0	0	2,396,112	2,408,475
http-01	1.1.5.14	L4/Gen	Run	20,975	1,420.907	4,285,216	0	0	0	2,307,601	2,322,348
http-02	1.1.5.15	L4/Gen	Run	17,103	1,283.603	3,455,712	0	0	0	2,063,265	2,074,849
http-03	1.1.5.16	L4/Gen	Run	11,477	1,099.272	2,301,312	0	0	0	1,762,444	1,763,414
http-04	1.1.5.17	L4/Gen	Stopped	0	0	0	0	0	0	0	0
http-05	1.1.5.18	L4/Gen	Stopped	0	0	0	0	0	0	0	0
http-06	1.1.5.19	L4/Gen	Stopped	0	0	0	0	0	0	0	0
http-07	1.1.5.20	L4/Gen	Stopped	0	0	0	0	0	0	0	0
http-08	1.1.5.21	L4/Gen	Stopped	0	0	0	0	0	0	0	0
http-09	1.1.5.22	L4/Gen	Stopped	0	0	0	0	0	0	0	0

Logged in to: lf1005c-is14120020:4002 as: Admin

- A. As each endpoint is started, the rate of URLs/second will start to converge on a rate that the web server is capable of providing. Finding the final web server performance rate is a matter of adding up the rates of all running Layer 4-7 endpoints.
- B. Several Layer 4-7 endpoints (10 in this case) are used so each endpoint can make an independently large number of URL requests without having to wait for too many replies. Each URL request is waiting for a reply from the web server, so if only one Layer 4-7 endpoint was making requests, it would spend too much time waiting for replies instead of generating more requests. Spreading the URL requests over several endpoints allows each LANforge connection to the web server to maximize its rate of URL requests.

B. Layer 4-7 Endpoint Results:

LANforge Manager Version 5.3.3

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-I/O Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains

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

View 0 - 200 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)
http-00	1.1.5.13	L4/Gen	Run	5,677	1,711.204	1,180,816	0	0	0	2,829,996	2,847,674
http-01	1.1.5.14	L4/Gen	Run	5,499	1,712.079	1,143,792	0	0	0	2,826,795	2,849,215
http-02	1.1.5.15	L4/Gen	Run	5,657	1,706.023	1,176,656	0	0	0	2,820,871	2,838,945
http-03	1.1.5.16	L4/Gen	Run	5,694	1,716.812	1,184,352	0	0	0	2,839,321	2,857,011
http-04	1.1.5.17	L4/Gen	Run	5,508	1,715.168	1,145,664	0	0	0	2,831,421	2,854,398
http-05	1.1.5.18	L4/Gen	Run	5,647	1,703.027	1,174,576	0	0	0	2,815,884	2,833,927
http-06	1.1.5.19	L4/Gen	Run	5,520	1,718.567	1,148,160	0	0	0	2,837,590	2,860,050
http-07	1.1.5.20	L4/Gen	Run	5,702	1,719.209	1,186,016	0	0	0	2,843,310	2,861,027
http-08	1.1.5.21	L4/Gen	Run	5,484	1,707.445	1,140,880	0	0	0	2,819,598	2,841,959
http-09	1.1.5.22	L4/Gen	Run	5,477	1,705.592	1,139,216	0	0	0	2,815,485	2,837,768

Logged in to: lf1005c-is14120020:4002 as: Admin

A. After starting all 10 endpoints, and letting them run for at least 1 minute, the overall URLs/second rate converges to around 17,000 URLs/second.

For more information see [LANforge User's Guide: Layer 4-7 Endpoints](#)

Candela Technologies, Inc., 2417 Main Street, Suite 201, Ferndale, WA 98248, USA  
[www.candelatech.com](http://www.candelatech.com) | [sales@candelatech.com](mailto:sales@candelatech.com) | +1.360.380.1618