

Providing HTTP Service on a Port

Goal: Configure and activate a http server bound to a specific port in LANforge.

This is useful if you want to provide an application layer target to interact with. This cookbook assumes you can access a shell prompt on the LANforge computer: the command-line instructions can be done at the system console, in a terminal over a remote desktop connection, or over **ssh**. The nginx service is only available on the Linux version of LANforge server.

Note: There are two web servers installed in a LANforge computer. The default web server is a stock version of Apache HTTPD that responds to all port 80 requests on all interfaces. For testing we recommend running Candela Technologies' version of Nginx on specific ports as covered in this cookbook. In contrast, Apache cannot bind to a network-device therefore we do not suggest running it.

Nginx can also be configured to listen to IPv6 traffic. Jump to the end of the cookbook for that technique.



- 1. Stop and disable LANforge system Apache instance.
 - A. Log into the LANforge computer as user lanforge



B. Become super-user using the command su - (or sudo -s)



C. Stop the Apache service with systemctl stop httpd



D. If you want this setting to persist after a reboot, disable the service: systemctl disable httpd



E. Set this as system default with: systemct1 daemon-reload



- 2. (Optional) There are other options for running Apache if you want to have both web servers available. You would not need stop and disable Apache, just restart it. You can change Apache to:
 - A. ...listen to a different port (like 81). Edit /etc/httpd/conf/httpd.conf and change the Listen option.



B. ...bind to a specific IP address, which is a good option if you configure the LANforge computer to have a fixed IP address on the management port. You would edit **httpd.conf** and change Listen to that specific IP address and port 80. Example: Listen 192.168.1.40:80

🔚 root@jed-f20:/etc/httpd/conf - Terminal 🕴 - 💷 🗙
GNU nano 2.3.2 File: httpd.conf
prevent Apache from glomming onto all bound IP addresses.
#Listen 12.34.56.78:80 Listen 80
Dynamic Shared Object (DSO) Support
AG Get Help AD WriteOut AR Read FileAY Prev PageAK Cut Text AC Cur Pos AX Exit AJ Justify AW Where Is AV Next PageAU UnCut TexAT To Spell

- 3. The demonstration test we'll create is making two ports, one for making requests and the other one for serving the protocol. Let's create two ports:
 - A. Create a redirect device:
 - A. In the Ports tab, click the **Create** button

<u>\$</u>				LA	Nforge M	lanage	r Version(5	5.3.1)				† _ 🗆 🗙
<u>C</u> ontrol	Repor	ting]	<u>[ear-Off Info P</u> lu	gins								
						S	top All	Restart	Manager		Refresh	HELP
Layer-4	Tes	t Mgr	Test Group R	esour	ce Mgr	Event Lo	g Alerts	Port Mgr	Messages			
Sta	atus		Layer-3	ľ	L3 Endp	s	WanLi	nks	At	tenuators		File-IO
Dis	p: 192	.168.1	.00.27:0.0	Sniff	Packets		Clear Count	ers R	eset Port	Delete		
Rpt	Timer	medi	um (8s) 🔻	1	Apply		View Detai	ls	Create	Modify	Batch N	1odify
					All Etherne	t Interfa	ces (Ports) for	all Resour	ces.			
Port	Pha	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts
1.1.0			192.168.100.40	0	eth1		1,704,372	16,940	5	4,416	3,275,505	4,719
1.1.1			0.0.0.0	0	eth2		1,019,346	11,357	3	2,183	2,842	33
1.1.2			0.0.0.0	0	eth3		86,405	349	0	143	2,842	33
												Þ
Logged	in to:	ed-f20):4002 as: Admin									

- B. Select Redirect
- C. Enter rd0a for #1 Redir name,
- D. and **rd0b** for #2 Redir name.
- E. Click **Apply** and then **Cancel** to close the window.

4			Create VLANs	s on Port:		t _ 🗆 🗙
0	○ MAC-VLAN ○ WiFi STA	○ 802.1Q-VLAN	direct O Bridge tor O WiFi Virtu	⊖ GRE Tunnel al Radio		
2	Shelf:	1	Resource:	1 (jed-f20)	Port: 1 (e	th2)
8	VLAN ID:		DHCP-IPv4			
e	Parent MAC:	08:00:27:ba:6e:4d	DHCP Client ID:	·		
	MAC Addr:	xxxxxxxxxxxxxxxxxxx	IP Address:		Global IPv6:	AUTO
	Quantity:		IP Mask or Bits:		Link IPv6:	AUTO
			Gateway IP:		IPv6 GW:	AUTO
	#1 Redir Name:	rd0a	#2 Redir Name:	rd0b		
	STA ID:		SSID:			
	WIFI AP:		Key/Phrase:			
	Use WPA	Use WPA2	Use WEP			
A	Down					
	Apply	<u>C</u> ancel				

- B. Configure **rd0a** as the service port:
 - A. In the Ports tab, double-click the row for port ${
 m rd0a}$

<u>ه</u>	🛓 LANForge Manager Version(5.3.1) 🔶 - 🗆 🗵											
<u>C</u> ontrol <u>R</u> eporting <u>T</u> ear-Off <u>I</u> nfo <u>P</u> lugins												
Stop All Restart Manager Refresh HELP												
Layer-4 Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages												
Status Layer-3 L3 Endps WanLinks Attenuators File-10												
Disp: 192.168.100	0.27:0.0 Sn	iff Packets	Clear Count	ers Re	set Port	Delete						
Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify												
		-All Ethernet Int	erfaces (Ports) for	all Resource	es.							
Port Pha Down	IP SE	C Alias Par	ent v RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts				
1.1.0 🔲 🔲 19	92.168.100.40 0	ethl	1,760,690	17,499	4	4,044	3,427,231	4,942				
1.1.1 0.	0.0.0 0	eth2	1,041,386	11,639	2	1,494	2,842	33				
1.1.2 0.	0.0.0 0	eth3	87,773	353	0	0	2,842	33				
1.1.3 0.	0.0.0 0	rd0a rd0l	b 738	9	0	73	738	9				
1.1.4 0.	0.0.0 0	rd0:	a 738	9	0	64	738	9				
Logged in to: jed-f20:4	002 as: Admin											

- B. The Configure Settings window will appear
- C. Set an IP of 10.2.0.1,
- D. a netmask of 255.255.255.0
- E. and the report time to faster (1 s).
- F. Click **OK**

<u>گ</u>		rd0a (jed-	f20) Configure	Settings			† _ 🗆 🗙
		Current: LI Driver Info: P	Port Status Info INK-UP PROBE-ER ort Type: Redired	ormation ROR TSO UFO GSO t-Device Peer: ro	GR0		
			Port Configu	ables			
Enable		General Inte	rface Settings			Port Rates	Advertise Rat
Set IP6 Info	DHCP-IPv6	DHCP Release	Down	Aux-Mgt		0 100t-HD 0 100bt-HD 0 1000t-FD	10bt-FD
Set MAC	DHCP-IPv4	Secondary-IPs	DHCP Client ID:	None	-	1000-FD 10G-FD Autopagatista	100bt-FD
Set TX Q Len	DNS Servers: IP Address:	BLANK	Global IPv6:	NA AUTO	-1		1000-FD
Set Offload	IP Mask:	255.255.255.0	Link IPv6:	AUTO		Renegotiate	Elow-Control
Set PROMISC	Gateway IP:	0.0.0.0	IPv6 GW:	AUTO			0
Set Rx-All/FCS	Alias: MAC Addr:	92:ff:4a:d9:1f:52	MTU:	1500		RX-ALL	TSO Enabled
	Br Cost:	Ignore 👻	Priority:	Ignore		RX-FCS	UFO Enabled
	Rpt Timer:	faster (1 s) 🔻	WiFi Bridge:	NONE		Bypass Power-UP	GSO Enabled
FTP						Bypass Power-DOWN	GRO Enabled
[Print Vie	w Details	Probe Sync	Apply		OK Cancel	

C. Configure **rd0b** as a client port

A. In the Ports tab, double-click the row for port $\ensuremath{\textbf{rd0b}}$

_	LA	Nforge M	lanage	r Version(5	5.3.1)			l	† _ 🗆 🗙			
Control Reporting Iear-Off Info Plugins												
Stop All Restart Manager Refresh HELP												
Layer-4 Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages												
Status Layer-3		L3 Endp	S	wanu	nks	At	tenuators		File-IU			
Disp: 192.168.100.27:0.0	Sniff	Packets		Clear Count	ers R	eset Port	Delete					
Rpt Timer: medium (8 s) Vapply View Details Create Modify Batch Modify												
		All Etherne	t Interfa	aces (Ports) for	all Resour	ces.						
Port Pha Down IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts			
1.1.0 🔲 🔲 192.168.100.	40 0	eth1		1,857,307	18,473	7	5,938	3,696,697	5,358			
1.1.1 0.0.0.0	0	eth2		1,074,323	12,067	3	2,036	2,842	33			
1.1.2 0.0.0.0	0	eth3		87,773	353	0	0	2,842	33			
1.1.3 10.2.0.1	0	rd0a	rd0b	738	9	0	0	1,386	17			
1.1.4 0.0.0.0	0	rd0b	rd0a	1,386	17	0	54	738	9			
•				1					•			
Logged in to: jed-f20:4002 as: Ac	min											

- B. The Configure Settings window will appear
- C. Set an IP of 10.2.0.3,
- D. a netmask of 255.255.255.0
- E. and the report time to faster (1 s).
- F. Click **OK**

<u>ه</u>		rd0b (jed-	f20) Configure	Settings		† _ 🗆 🗙
		Current: L Driver Info: P	Port Status Info INK-UP PROBE-ERI ort Type: Redirec	ormation ROR TSO UFO GSO GR t-Device Peer: rd0a	0	
			Port Configur	ables		
Enable		General Inte	erface Settings		Port Rates	Advertise Rat
Set IP6 Info	DHCP-IPv6	DHCP Release	Down	Aux-Mgt	0 100bt-HD 0 100bt-FD	10bt-FD
Set MAC	DHCP-IPv4	Secondary-IPs	DHCP Client ID:	None 💌	1000-FD 100-FD 100-FD	100bt-FD
Set TX Q Len	DNS Servers:	BLANK	Peer IP:	NA	O Autonegotiate	1000-FD
Set MTU	IP Address:	10.2.0.3	Global IPv6:	AUTO	Renegotiate	10G-FD
Set Offload	IP Mask:	255.255.255.0	Link IPv6:	AUTO	Restart Xcvr	Flow-Control
Set PROMISC	Gateway IP:	0.0.0.0	IPv6 GW:	AUTO	PROMISC	
Set Rx-All/FCS	Alias:] MTU:	1500	RX-ALL	Offload
🔲 Set Bridge Info	MAC Addr:	6e:ba:c2:12:fe:46	TX Q Len	1000	RX-FCS	TSO Enabled
Services	Br Cost:	Ignore 💌	Priority:	Ignore 💌	Bypass NOW!	GS0 Enabled
HTTP	Rpt Timer:	faster (1 s) 🔻	WiFi Bridge:	NONE	Bypass Power-UP	LRO Enabled
FTP					Bypass Power-DOWN	GRO Enabled
1					Bypass Disconnect]
	Print Vie	w Details	Probe Sync	Apply	OK Cancel	

4. Enable HTTP service on your upstream port using the following steps.

A. Enable the nginx service on port rd0a:

A. In the Ports tab, double-click the row for port **rd0a**

<u></u>	🛓 LANforge Manager Version(5.3.1) 🟥 – 🗆 🗶												
<u>C</u> ontrol	Control Reporting Iear-Off Info Plugins												
Stop All Restart Manager Refresh HELP													
/													
Layer-4 Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages													
Sta	atus		Layer-3	ľ.	L3 Endp	S	[WanLi	nks	At	tenuators		File-I0	
Dis	p: 192	.168.1	.00.27:0.0	Sniff	Packets		Clear Count	ers	Reset Port	Delete			
Rpt	Rpt Timer: medium (8 s) ▼ Apply View Details Create Modify Batch Modify												
				,	All Etherne	t Interfa	ices (Ports) for	all Resou	urces.				
Port	Pha	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	
1.1.0			192.168.100.40	0	eth1		2,044,427	20,36	5 11	8,839	4,328,679	6,360	
1.1.1			0.0.0.0	0	eth2		1,110,431	12,52	5 2	1,571	2,842	33	
1.1.2			0.0.0.0	0	eth3		89,483	35	8 0	155	2,842	33	
1.1.3			10.2.0.1	0	rd0a	rd0b	1,386	1	7 0	0	1,386	17	
1.1.4			10.2.0.3	0	rd0b	rd0a	1,386	1	7 0	0	1,386	17	
•													
Logged	in to: j	jed-f20	:4002 as: Admir	1									

B. The Configure Settings window will appear

- C. In the lower left column of the window, enable HTTP option.
- D. Click **OK** and then close the window.

		rdva (jed-	Port Status Info	rmation			
		Currenti			GRO		
		Current: Li	INK-OF FROBE-EN	NOR 150 OFO GSC	GRU		
		Driver Into: P	ort Type: Redired	t-Device Peer: re	dub		
			Port Configur	ables			
Enable —		General Inte	rface Settings		1	Port Rates	- Advertise Bat
🗹 Set IP Info						O 10bt-HD	10bt-HD
Set IP6 Info						O 100bt-HD	D 10bt-ED
Set IF Down	DHCP-IPv6	DHCP Release	Down	Aux-Mgt		O 100bt-FD	
Set MAC	DHCP-IPv4	Secondary-IPs	DHCP Client ID:	None	-	○ 1000-FD ● 10G-FD	100bt-FD
Set TX Q Len	DNS Servers:	BLANK	Peer IP:	NA		O Autonegotiate	1000-FD
Set MTU	IP Address:	10.2.0.1	Global IPv6:	AUTO		Renegotiate	10G-FD
Set Offload	IP Mask:	255.255.255.0	Link IPv6:	AUTO		Restart Xcvr	Flow-Control
Set PROMISC	Gateway IP:	0.0.0.0	IPv6 GW:	AUTO			1
Set Rx-All/FCS	Alias:		MTU:	1500		RX-ALL	Offload
🗌 Set Bridge Info	MAC Addr:	92:ff:4a:d9:1f:52	TX Q Len	1000		RX-FCS	TSO Enabled
- Services -	Br Cost:	Ignore 🗸 🗸	Priority:	Ignore	-	Bypass NOW!	UFO Enabled
	Rpt Timer:	faster (1 s) 🔻	WiFi Bridge:	NONE	-	Bypass Power-UP	LBO Enabled
FT Enable HTTP s The config file your own calle You may have	server (nginx) for will be automati ed: ./vr_conf/ngin to manually disa Print Vie	this port. cally generated, or yo ([ifname].conf on the ble the standard http w Details	ou can create e LANforge Resou od service in your Probe Sync	urce. OS to avoid addr	ress b	Dinding conflicts, OK Cancel	GRO Enabled

- B. (Optional) Modify the nginx config file for port **rd0a**. This example assumes you are logged into the LANforge system console, or have connected to the desktop using a remote-desktop client like vncviewer. If you are familiar with editing from the command-line, you will likely know how to do this via ssh.
 - A. From the desktop Accessories menu, select Terminal Emulator,
 - B. Change to the LANforge nginx directory: cd /home/lanforge/vr_conf

lanforge@jed-f20:~/vr_conf - Terminal	† _ 🗆 X
[lanforge@jed-f20 vr_conf]\$ cd	
[lanforge@jed-f20 ~]\$ cd vr_conf	
[lanforge@jed-f20 vr_conf]\$ ls *conf	
nginx_rd0a.conf radvd.conf	
[lanforge@jed-f20 vr_conf]\$	

C. Edit the file nginx_rd0a.conf. If you do not see the file, you might have connected to the wrong LANforge resource, or you might not have clicked OK/Apply when enabling the Configure Settings window for port rd0a.



D. You will see that the listen directive is already set to 10.2.0.1:80 bind_dev=rd0a;



E. If you want to change settings, delete the first line of the config file as part of your changes. This will signal LANforge not to overwrite the file.



- C. To apply the changes to the nginx service on this port:
 - A. Disable the HTTPD service in the rd0a Configure Settings window,

		rd0a (jed-	-f20) Configure	Settings			† - =
		Current: L Driver Info: F	Port Status Info INK-UP PROBE-ER Port Type: Redired	ormation ROR TSO UFO GSI t-Device Peer: r	0 GRO		
			Port Configu	ables			
Enable Set IP Info		General Inte	erface Settings			Port Rates	Advertise Rat
Set IP6 Info	DHCP-IPv6	DHCP Release	Down	Aux-Mgt		0 100bt-HD 0 100bt-FD	
Set MAC	DHCP-IPv4	Secondary-IPs BLANK	DHCP Client ID: Peer IP:	None	-	10G-FD Autonegotiate	100bt-FD
Set MTU	IP Address:	10.2.0.1	Global IPv6:	AUTO		Renegotiate	1000-FD
Set PROMISC	Gateway IP:	0.0.0.0	IPv6 GW:	AUTO		Restart Xcvr	Flow-Control
Set Rx-All/FCS	Alias: MAC Addr:	92:ff:4a:d9:1f:52	MTU: TX Q Len	1500 1000		RX-ALL	TSO Enabled
	Br Cost:	Ignore	Priority:	Ignore NONE		Bypass NOW!	GS0 Enable
FTP Enable HTTP The config fi your own cal You may hav	server (nginx) fo le will be automa led: ./vr_conf/ngi e to manually dis	or this port. tically generated, or nx_[ifname].conf on t sable the standard h	you can create the LANforge Res ttpd service in yo	ource. ur OS to avoid ac	Idress	-DOWN nect	☐ LRO Enableo
	Print Vie	w Details	Probe Sync	Apply	/	OK Cancel	

- B. Click the **Apply** button,
- C. Enable HTTPD service,

		rd0a (jed-	f20) Configure	Settings		† _ 🗆 X
		Current: L Driver Info: P	Port Status Info INK-UP PROBE-ER ort Type: Redired	ormation ROR TSO UFO GSO GF :t-Device Peer: rd0b	30	
			Port Configu	rables		1
Enable Set IP Info		General Inte	rface Settings		Port Rates	Advertise Rat
Set IP6 Info	DHCP-IPv6	DHCP Release	Down	Aux-Mgt	O 100bt-HD O 100bt-FD	10bt-FD
Set MAC	DHCP-IPv4	Secondary-IPs BLANK	DHCP Client ID: Peer IP:	None NA	100-FD 10G-FD O Autonegotiate	100bt-FD
Set MTU	IP Address: IP Mask:	10.2.0.1 255.255.255.0	Global IPv6:	AUTO AUTO	Renegotiate	10G-FD
Set PROMISC	Gateway IP: Alias:	0.0.0.0] IPv6 GW:] MTU:	AUTO 1500		Offload
Set Bridge Info	MAC Addr: Br Cost:	92:ff:4a:d9:1f:52	TX Q Len	1000	RX-FCS	✓ TSO Enabled ✓ UFO Enabled
FT Enable HTTP s The config file	Rpt Timer: erver (nginx) for will be automatic d: ./vr_conf/nginx	faster (1 s) ▼ this port. cally generated, or yo _[ifname].conf on th	WiFi Bridge:	NONE -	Bypass Power-UP	 ✓ GSO Enabled □ LRO Enabled ✓ GRO Enabled
Tou may have	Print Vie	w Details	Probe Sync	Apply	OK Cancel	

- D. Click the **Apply** button,
- E. Click the **Cancel** button to close the window if you are done.

- D. A quick way to add a file into the nginx document root folder is to symlink the system dictionary there. You will need to be in a terminal or unix shell of the resource running nginx (192.168.100.40 in this example)
 - A. Change the ownership of the document root directory to user lanforge:
 - B. sudo chown lanforge:lanforge /usr/local/lanforge/nginx/html



C. cd /usr/local/lanforge/nginx/html

0.			
	🔚 lanforge@jed-f20:/usr/local/lanforge/nginx/html - Terminal		
	[lanforge@jed-f20 ~]\$ sudo chown lanforge:lanforge /usr/local/lanforge/nginx/html		
	[lanforge@jed-f20 ~]\$ cd /usr/local/lanforge/nginx/html/		
	[lanforge@jed-f20 html]\$		
D.	ln -s /usr/share/dict/linux.words .		
	🔚 lanforge@jed-f20:/usr/local/lanforge/nginx/html - Terminal	† =	
	[lanforge@jed-f20 ~]\$ sudo chown lanforge:lanforge /usr/local/lanforge/nginx/html		
	[lanforge@jed-f20 ~]\$ cd /usr/local/lanforge/nginx/html/		
	[lanforge@jed-f20 html]\$ ln −s /usr/share/dict/linux.words . [lanforge@ied=f20 html]\$		

E. (Optional) To load a larger payload (such as a DVD file), you can use Filezilla (or scp) to copy the file over. You will want to have changed the nginx document root directory owner to lanforge (as above): A. From your desktop, using Filezilla

🔁 FileZilla								x
File Edit View Transfer Server Bookmarks Help								
<u>⊯ - ▼ € # ≈ % ≈ % = @ @ #</u>	8							
Host: sftp://jed-f_0 Username: lanforge Pas	is <u>w</u> ord:	•••	Port:		Quickconne	ct 🔻		
								~
								-
			tor					_
Local site: Y:\		. Remote si	te;					
	^							
		1						
🗄 🚎 Z: (\\192.168.100.14\memory_card)	-							
Filename Filesize	Filetype ^	-						
DialogDemo.jnlp 2,337	JNLP File							
door_liftarn_Doorwhite_stroke.svg 5,425	SVG Docum			El	F (1.)	1	D	
Driver_Win7_7075_09182013.zip 900,589	Compresse	Filename		Filesize	Filetype	Last modified	Permissions	0
dropbox_1.6.0_amd64.deb 94,178	DEB File							
Sedrawmax.exe 43,538,984	Application			No	t connected t	o any server		
english-anvil.jpg 6,370,518	JPEG image				e connected t	o uny server		
F1A55-M-LE-R2-ASUS-5402.zip 2,725,792	Compressee							
Fedora-19-x86_64-netinst.iso 332,398,592	Disc Image							
Fedora-20-x86_64-netinst.iso 336,592,896	Disc Image							
FileDrop-master.zip 210,344	Compresse							
III 84 053 320	Compresser	•						•
Selected 1 file. Total size: 336,592,896 bytes		Not conne	cted.					
Server/Local file Direction Remote file		Size	Priority	Status				
Oueued files Failed transfers Successful transfers								
								-
						Queue: emp	ty 🔍	•

- I. quick connect to sftp://192.168.100.40 (also named jed-f20 in this example)
- II. using username lanforge and password lanforge
- B. In the left column, choose your local directory (Y:\downloads)

🔁 sftp://lanforge@jed-f20 - FileZilla						x
File Edit View Transfer Server Bookmarks Help						
1 - 7 - 1 - 1	l 🚰 🗥					
Host: sftp://jed-f20 Username: lanforge	Password:	•• <u>P</u>	ort: Quickce	onnect		
Status: Listing directory /home/lanforge Status: Calculating timezone offset of server Command: mtime "libcrypto.so.10-x64" Response: 1411781490 Status: Timezone offsets: Server: -25200 seconds. Status: Directory listing successful	Local: -25200 seconds. Dif	fference: 0 seco	nds.			4 III 4
Local site: Y:\	•	Remote site:	/home/lanforge			-
⊕-]} Windows ⊕ D: ⊕ Y: (\192.168.100.27\downloads) ⊕ Z: (\192.168.100.14\memory_card)	• •		me lanforge			
Filename	Filesize Filetype 🔺					
DialogDemo.jnlp door_liftarn_Doorwhite_stroke.svg	2,337 JNLP File 5,425 SVG Docum	Filename	Filesize Filetype	Last modified	Permissions	
dropbox_1.6.0_amd64.deb	94,178 DEB File 538,984 Application	 .cache	File fold	er 9/29/2014 11:2	drwx	
english-anvil.jpg 6,3 Image: FLASS-M-LE-R2-ASUS-5402.zip 2,3 Image: FLASS-M-LE-R2-ASUS-5402.zip 2,3	370,518 JPEG image 725,792 Compresse 208,592 Disc Image	local .mozilla	File fold File fold	er 9/5/2014 5:34:0 er 9/5/2014 5:18:0	drwxr-xr-x drwxr-xr-x	
Fedora-19-x86_64-netinist.iso S32,- Fedora-20-x86_64-netinist.iso S36,-	592,896 Disc Image	🎩 .ssh	File fold	er 9/26/2014 4:44:	drwx	
🚺 FileDrop-master.zip	210,344 Compresser	DB	File fold File fold	er 9/30/2014 2:36: er 9/30/2014 2:02:	drwxr-xr-x	-
dromersdk-231 zin 847	153 320 Compresser	•				•
Selected 1 file. Total size: 336,592,896 bytes		135 files and 3	3 directories. Total size: !	55,041,229 bytes		
Server/Local file Direction Remote file		Size Prio	ority Status			
Queued files Failed transfers Successful transfers				~		
				🛗 🎟 Queue: empty		

C. In the right column, type in the nginx document root, /usr/local/lanforge/nginx/html and hit enter

E sftp://lanforge@jed-f20 - FileZilla										x
File Edit View Transfer Server Be	okmarks Help									
Host: sftp://jed-f20 Username:	lanforge Pa	ss <u>w</u> ord:	•••••	•••	Port:		Quickconnec	t 🔻		
itatus: Retrieving directory listing Command: cd "/usr/local/lanforge/nginx/html" Response: New directory is: "/usr/local/lanforge/nginx/html" Command: Is Status: Listing directory /usr/local/lanforge/nginx/html Status: Directory listing successful										
Local site: Y:\			-	Remote sit	e: /usr/	local/lanf	forge/nginx/ht	ml		-
⊕	pads)		^) · · · ·	lanfo usr 2 local	rge pforge	J	•		
2. ((152.100.100.14(intend	ry_curd)					nginx		-		Ξ
Filename	Filesize	Filetype	· ^			htn	nl			
🖃 DialogDemo.jnlp	2,337	JNLP Fi	le							-
🔊 door_liftarn_Doorwhite_stroke.svg	5,425	SVG Do	cum	Filename		Filerize	Filebre	Last modified	Permissions	0
引 Driver_Win7_7075_09182013.zip	900,589	Compre	esser			1 1103120	Thetype	Last mounieu	Permissions	00
dropbox_1.6.0_amd64.deb	94,178	DEB File	2					0.000 /001 4.0 57		
💐 edrawmax.exe	43,538,984	Applica	tion	Inux.wo	D		Filefolder	9/30/2014 2:57:	Irwxrwxrwx	lar
🔄 english-anvil.jpg	6,370,518	JPEG im	nage	S0x.htm	1	537	Firefox H1	9/1//2014 10:3	-rw-rw-r	50
F1A55-M-LE-R2-ASUS-5402.zip	2,725,792	Compre	esser	Index.h	tml	612	Firefox H1	9/1//2014 10:3	-rw-rw-r	50
🕑 Fedora-19-x86_64-netinst.iso	332,398,592	Disc Im	age							
💽 Fedora-20-x86_64-netinst.iso	336,592,896	Disc Im	age							
FileDrop-master.zip	210,344	Compre	esse							
aronar-sdk-231 zin	84 052 220	Compre								
•			•	•			m			-
Selected 1 file. Total size: 336,592,896 byte:	5			2 files and 1	director	y. Total s	ize: 1,149 bytes			
Server/Local file Direction	on Remote file			Size	Priority	Status				
Oueued files Failed transfers Succ	essful transfers									
George mes Force considis Succ	cost of cromaters						~	-		
							1	Queue: empty		•

D. In the left column, double-click your DVD image (Fedora-20-x86_64.netinst.iso)

5 sftp://lanforge@jed-f20 - FileZilla										x
File Edit View Transfer Server Bookmarks	Help									
1 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	🗊 🕵 🚰 🖉	8								
Host: sftp://jed-f20 Username: lanforge	Pas	ss <u>w</u> ord: •••	•••	••	Po	ort:	Quickconnect	•		
Status: Connected to jed-f20.candelatech.	com									-
Status: Starting upload of Y:\Fedora-20-x80 Command: cd "/usr/local/lanforge/nginx/html	5_64-netinst.iso									
Response: New directory is: "/usr/local/lanfor	ge/nginx/html"	2000		5						_
Command: put "Y:\Fedora-20-x86_64-netinst.is Status: local:Y:\Fedora-20-x86_64-netinst.is	so => remote://	x86_64-netins usr/local/lanf	st.isc forge	o" e/nainx/htm	I/Fe	dora-20-x86 6	4-netinst.iso			-
	io => remotel/t	asi, iocal, iaiii	-			0010 20 100_0	+ neunstise			-
Local site: Y:\			•	Remote sit	e:	/usr/local/lant	forge/nginx/htr	nl		•
i Windows			^	±		lanforge				^
U:			_		2	local				
Z: (\\192.168.100.14\memory card)			-		÷	? lanforge				
						🔄 🥐 nginx				=
Filename	Filesize	Filetype				🗄 🌗 htn	nl			
🔟 DialogDemo.jnlp	2,337	JNLP File			_					-
Driver Win7 7075 09182013 zin	000 580	Compresse		Filename		Filesize	Filetype	Last modified	Permissions	Ov
dropbox 1.6.0 amd64.deb	94 178	DFB File		. .						
Sedrawmax.exe	43,538,984	Application		🔊 linux.w	D		File folder	9/30/2014 2:57:	Irwxrwxrwx	lar
🔄 english-anvil.jpg	6,370,518	JPEG image		😻 50x.htm	nl .	537	Firefox HT	9/17/2014 10:3	-rw-rw-r	50
F1A55-M-LE-R2-ASUS-5402.zip	2,725,792	Compresse		📕 😻 index.h	tml	612	Firefox H1	9/1//2014 10:3	-rw-rw-r	50
Fedora-19-x86_64-netinst.iso	332,398,592	Disc Image								
Fedora-20-x86_64-netinst.iso	336,592,896	Disc Image								
FileDrop-master.zip	210,344	Compresse	-							
4 III	8/1053 8/0	1 omnrerrei		•			III			P.
Selected 1 file. Total size: 336,592,896 bytes				2 files and 1	dir	ectory. Total s	ize: 1,149 bytes			
Server/Local file Direction Remo	ote file			Size	Prio	rity Status				
📱 🖳 sftp://lanforge@jed-f20										
Y:\Fedora-20-x86_64-netin>> /usr/	local/lanforge/r	nginx/ht	33	36,592,896	Nor	mal Transfe	erring			
00:00:01 elapsed 00:00:07 left	14.5%	49,020,928	8 by	tes (46.8 MiB	/s)					
Queued files (1) Failed transfers Successful	transfers									
							a	Queue: 321.0	MiB 🔍 🔍	
(L			-		-					

E. you will see the file when it is transferred appear in the right column

5ftp://lanforge@jed-f20 - FileZilla									x
File Edit View Transfer Server Bookmarks	; Help								
1 - VI 🛱 🗱 🕸 🖗 🛷									
Host: sftp://jed-f20 Username: lanforge	Pa	ss <u>w</u> ord:	•••••	••	Port:	Quickcon	nect 🔻		
Status: local/Y:\Fedora-20-x86_64-netinst.iso => remote/usr/local/lanforge/nginx/html/Fedora-20-x86_64-netinst.iso Status: File transfer successful, transferred 332,955,648 bytes in 8 seconds Status: Retrieving directory listing Command: Is Status: Listing directory /usr/local/lanforge/nginx/html Status: Directory /usr/local/lanforge/nginx/html									
Local site: Y:\			•	Remote sit	e: /usr/lo	ocal/lanforge/nginx,	/html		•
			* •		Ianfor usr ? local ⊡? lar	ge forge			*
Filename	Filesize	Filetype	•			nginx			
DialogDemo.inlp	2.337	JNLP File	e		(±)-	- in numi			-
door_liftarn_Doorwhite_stroke.svg	5,425	SVG Doc	um_			~		F (1) -	
Driver_Win7_7075_09182013.zip	900,589	Compre	ssei	Filename			Filesize	Filetype	Last m
dropbox_1.6.0_amd64.deb	94,178	DEB File		.				F1 6 11	0.00.0
💐 edrawmax.exe	43,538,984	Applicat	tion	Inux.w	ords		527	File folder	9/30/2
🔚 english-anvil.jpg	6,370,518	JPEG ima	age	50x.nth	11 20 - 86 64		236 502 906	Firefox H1	9/17/2
🚮 F1A55-M-LE-R2-ASUS-5402.zip	2,725,792	Compre	ssei	Fedora	-20-x80_04	-neti st.iso	530,592,890	Disc Image	0/17/2
Fedora-19-x86_64-netinst.iso	332,398,592	Disc Ima	ge	le index.n	umi	•	012	Filelox H1	9/11/2
Edora-20-x86_64-netinst.iso	336,592,896	Disc Ima	ige						
🛃 FileDrop-master.zip	210,344	Compre	sse						
d aroma-sdk-231 zin ℓ III	8/ 052 220	Compre	1	•					
Selected 1 file. Total size: 336,592,896 bytes				Selected 1	ile. Total s	ize: 336,592,896 byte	es		
Server/Local file Direction Rem	ote file			Size	Priority	Status			
Queued files Failed transfers Successful	transfers (1)								
							🔒 🎟 Queue: er	npty	••

- 5. Configure application-layer traffic using the Layer 4-7 tab tools:
 - A. In the Layer 4-7 tab, click the **Create** button,

<u>ه</u>	LANforge Manager	Version(5.3.1)	
<u>Control</u> <u>Reporting</u> <u>Tear-Off</u> <u>I</u>	nfo <u>P</u> lugins		
		Stop All Restart Manager	Refresh HELP
File-IO Layer-4 Test Mgr	Test Group Resource Mgr Event	Log Alerts Port Mgr Messages	
Status	Layer-3 L3 Endps	WanLinks	Attenuators
Rpt Timer: default (5 s)	▼ Go Test Manager all ▼	Select All Start Stop	Quiesce Clear
View 0 - 200	Go	Display <u>reate</u> <u>M</u> odify	Batch Modify Delete
	Layer-4 Endpoints	for Selected Test Manager	
Name EID Type	Status Total-URLs URLs/s	Bytes-RD Bytes-WR Tx Rate (1 min)	Rx Rate (1 min)
Logged in to: jed-f20:4002 as	: Admin		

- B. You will see the Create/Modify L4Endpoint window
- C. Create a connection named web-requests,
- D. With a Report timer of fast (1 s)
- E. from Resource (jed-f20) port rd0b.
- F. Let's make ten requests a second. Enter 6000 for URLs per 10m.
- G. Jump down to the URL field, and enter http://10.2.0.1/index.html
- H. and to avoid saving the result, set the Dest File to /dev/null

I. Click **OK** and the window will close.

<u>ن</u>	c	reate/Modify	L4Endpoint			Ĵ	_ 🗆 X
Name:	web-requests	Rpt Timer:	fast (1 s)	-	Test Manager:	default_tm	-
Shelf: 1 🔻 F	Resource: 1 (jed-f20)	▼ Port: 4 (rd0b)	-	IP Addr:	AUTO	-
Endp Name:	0	URLs per 10m:	6000		Max Speed:	Infinite	-
Quiesce:	3 (3 sec) 💌	URL Timeout:	10000	-	DNS Cache Timeout:	60	-
TFTP Block Size:	Default (512 B) 💌						
Proxy Port:		Proxy Server:					
Proxy Auth:							
Proxy Auth Types: 🔄 Basic 🔲 Digest 🛄 NTLM							
HTTP Compression: 🔲 Gzip 🔲 Deflate							
HTTP Auth Types:	🗌 Basic 🔲 Digest 🔲 GSS	-Negotiate 🔲 N	TLM				
SSL Cert:	ca-bundle.crt						
SMTP-From:							
Agent/RCTP-TO:							
UL/DL:	Download 👻	IPv4	IPv6				
URL:	http://10.2.0.1/index.html						
Source/Dest File:	/dev/null						
Get-URLs-From-F	ile 🗌 Authenticate Server	Use-Proxy	Allow-Reuse		Allow-Cache 📃 Ena	ble 4XX 🔲 Sho	w Headers
Bind DNS	TP PASV 🗹 FTP EPSV						
	Apply	ОК	Batch-Create		Cancel		

- 6. Running the traffic is simple:
 - A. Select the row named web-requests in the Layer 4-7 table,
 - B. Click the **Start** button.

<u></u>				LANforge	Manager	Version(5.3.1)				† -	
<u>Control</u> <u>Rep</u>	oorting	Tear-Off	nfo <u>P</u> lugins									
						Stop All	Res	tart Manage	er	Refres	sh	HELP
File-IO La	File-10 Layer-4 Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages											
Stat	us		Layer-3		L3 Endps		Wanl	.inks		Attenuat	ors	
Rpt Timer: default (5 s) 🗸 Go Test Manager all 🗸 Select All Start Stop Quiesce Clear												
View	0 - 200			▼ Go		Dis	play Cr	eate <u>M</u>	odify <u>B</u>	atch Modify	Dele	te
		- 94		Layer-4	Endpoints i	or Selected	Test Manage	r		1		
Name	EID	Туре	Status	Total-URLs	URLs/s	Bytes-RD	Bytes-WR	Tx Rate	Tx Rate (1 min)	Rx Rate	Rx Rate (1 min)	
web-requ	1.1.4.1	L4/Gen	Stopped	0	0	0	0	0	(0 0)	0
•		111										Þ
Logged in to	o: jed-f2	0:4002 as	a: Admin									

C. Click the **Display** button to see more detail on the traffic:

	Laye	r-4 Endpoint we	b-requests Mar	nager: jed	-F20		† _ 🗆 🗙
		E	ndpoint: web-reque	ests —			
Resource: Port: IP: bps TX: Pps Tx:	Port jed-f20 rd0b 10.2.0.3 42.143 Kbps 69 pps	EID: Cfg URLs/10m: RX Rate: TX Rate: URLs/s:	ooint 1.1.4.1 6000 49.221 Kbps 0 bps 10	1: 879 2: 155 4: 0 8: 0 16: 0 32: 0 64: 0 128: 0 256: 0 512: 0 1024: 0 2048: 0	First RX Avg:0 03	1: 713 2: 304 4: 17 8: 0 16: 0 32: 0 64: 0 128: 0 256: 0 512: 0 1024: 0 2048: 0	URL Completec Avg:1 03
bps RX: Pps RX: Errors: 65.536 Kps 256 ps 0 ps 17.18 Obps 23.554 Mbps 131.072 Kbps 33.554 Mbps 131.072 Kbps 131.072 Kbps 256 bps 0 bps URLS Proces	95.003 Kbps 49 pps 0	URLs Processed: Total-ERR: Type: ut Rx Throughput	1,034 0 L4/Gen	1: 1034 2: 0 4: 0 8: 0 32: 0 64: 0 128: 0 256: 0 512: 0 1024: 0 2048: 0	2^20 -2^15 -1024 -32 0 DNS Complete Avg:0 00 2^20 -2^15 -1024 -32 0	l	2^20 -2^15 -1024 -32 0
Pause Dis	splay Print	Stop	Refresh	1	Modify	Clear	Close

- 7. It is also possible to verify your connection setup from the command-line:
 - A. To verify the Layer 3 connection, you can use ping:

lanforge@jed-f20:/usr/local/lanforge/nginx/html - Terminal	† = 🗆 >
<pre>[lanforge@jed-f20 html]\$ ping -I 10.2.0.3 10.2.0.1 PING 10.2.0.1 (10.2.0.1) from 10.2.0.3 : 56(84) bytes of data. 64 bytes from 10.2.0.1: icmp_seq=1 ttl=64 time=0.077 ms 64 bytes from 10.2.0.1: icmp_seq=2 ttl=64 time=0.063 ms 64 bytes from 10.2.0.1: icmp_seq=3 ttl=64 time=0.039 ms ^C 10.2.0.1 ping statistics 3 packets transmitted, 3 received, 0% packet loss, time 2000ms rtt min/avg/max/mdev = 0.039/0.059/0.077/0.018 ms</pre>	

B. To see that nginx is listening on port 80, use netstat on the resource running nginx and see what is listening on port 80:

sudo netstat -ntlp | grep ':80'

🔚 lanforge@jed-f20:/usr/local/lanforge/nginx/html - Terminal	t _ 🗆 🗙
[lanforge@jed-f20 html]\$ sudo netstat -ntlp grep ':80' tcp 0 0 10.2.0.1:80 0.0.0.0:* LISTEN [lanforge@jed-f20 html]\$	5034/nginx: master

C. To see the output of the web request, you can use LANforge's version of curl located in /home/lanforge/local/bin/curl. Since it uses bundled libraries, first type:

cd /home/lanforge &&/lanforge.profile	
This sets up all environment variables and paths to work with the binaries and libraries shipped with LANforg	ge.
📧 root@jed-f20:/home/lanforge 📑 – 🗆 🗙	
root@jed-f20 /home/lanforge > cd /home/lanforge &&/lanforge.profile	
root@jed-f20 /home/lanforge >	
droovy "chained actions"	
- run 191, dynamic report-	

- D. Verify it runs without complaint:
 - /home/lanforge/local/bin/curl --help



E. If you scroll up in your terminal, you will see options available in the output not found in a normal version of curl, like

--dns_server, --dns_interface, --dns_ip4_addr, --dns_ip6_addr, --interface and --localaddr. We will use -- interface next.

🔚 lanforge@jed-f20:~ - Terminal	† _ 🗆 🗙
hostpubmd5 MD5 Hex encoded MD5 string of the host public key. (SSH)	
-0,httpl.0 Use HTTP 1.0 (H)	
ignore-content-length Ignore the HTTP Content-Length header	
-i,include Include protocol headers in the output (H/F)	
-k,insecure Allow connections to SSL sites without certs (H)	
interface INTERFACE Specify network interface/address to use	-
localaddr IPADDR Specify local IP-address to use	
-4,ipv4 Resolve name to IPv4 address	
-6,ipv6 Resolve name to IPv6 address	
-j,junk-session-cookies Ignore session cookies read from file (H)	
keepalive-time SECONDS Interval between keepalive probes	
key KEY Private key file name (SSL/SSH)	
key-type TYPE Private key file type (DER/PEM/ENG) (SSL)	
krb LEVEL Enable Kerberos with specified security level (F)	
libcurl FILE Dump libcurl equivalent code of this command line	

- F. Craft your download command: cd /home/lanforge/local/bin
- ./curl --interface 10.2.0.3 'http://10.2.0.1/index.html'



G. You will see the html output in the terminal:



- H. There will be a record of connections and errors in the nginx logs directory: $\operatorname{\mathsf{cd}}$
 - /usr/local/lanforge/nginx/logs



- 8. [Advanced] Creating IPv6 traffic to **nginx**. We will assume a scenario where **eth1** will serve nginx requests and **eth2** will generate requests.
 - A. Add IPv6 addresses to your ports. We will add
 - ee::2:1/120 for eth1,
 - ee::2:2/120 for eth2,
 - and set the gateways for them to ee::2:fe. We won't actually use a gateway, but our port configuration requires it.

A. Here is eth1, and we will enable the $\ensuremath{\textbf{HTTP}}$ service as well.

	C	urrent: LINK-UP 10 river Info: Port Type: Ef	Port Status Info 00bt-FD AUTO-NEG thernet Driver: e100	rmation OTIATE Flow-Control 1 00(7.3.21-k8-NAPI) Bu	TSO GSO GRO is: 0000:00:09.0	
			Port Configu	rables		
Enable	Down	General I	nterface Settings		Port Rates	Advert Rates -
Set TX Q Len	DHCP-IPv6	DHCP Release	DHCP Vendor ID: DHCP Client ID:	None	 ✓ 100bt-HD ○ 100bt-FD ○ 100bt-FD ○ 1000-FD ○ 10G-FD 	 ✓ 100bt-HD ✓ 100bt-HD ✓ 100bt-FD
Set Offload Set Rate Info Set PROMISC Set Rx-AII/FCS	DNS Servers: IP Address: IP Mask:	BLANK 0.0.0.0 0.0.0.0	Peer IP: Global IPv6: Link IPv6:	NA ee::2:1/120 AUTO	40G-FD Autonegotiate Renegotiate Restart Xovr	 ✓ 1000-FD ☐ 10G-FD ☐ 40G-FD ✓ Flow-Control
Set Bypass Set Bridge Info Set CPU Mask	Gateway IP: Alias: MAC Addr:	0.0.0.0 08:00:27:73:6d:0d] IPv6 GW:] MTU:] TX Q Len	ee::2:te 1500 1000	PROMISC	Offload
- Services	Br Cost: Rpt Timer:	medium (8 s)	Priority: Watchdog:	0 NONE	Bypass NOW!	GSO Enabled
RADIUS	CFO Mask.		wiri bridge.		Bypass Power-DOWN	GRO Enabled

B. Here is eth2, notice how we added an IPv4 address to the port. Do that so that the Create Layer 4-7 dialog does not complain.

		eth2 (jed-f21.	candelatech.com)	Configure Setting	gs		\odot \diamond
			Port Status Info	rmation			
	C	urrent: LINK-UP 10	00bt-FD AUTO-NEG	OTIATE Flow-Contr	OI TSO C	aso gro	
	Di	river Info: Port Type: E	thernet Driver:e100	00(7.3.21-k8-NAPI)	Bus: 000	00:00:0a.0	
			Port Configu	rables			
		General	Interface Settings		-	Port Rates	Advert Rates -
Set IF Down						O 10bt-HD	✓ 10bt-HD
Set MAC	Down	Aux-Mgt				O 1006-FD	✓ 10bt-FD
Set TX Q Len	DHCP-IPv6	DHCP Release	DHCP Vendor ID:	None	-	O 100bt-FD	100bt-HD
Set MTU	DHCP-IPv4	Secondary-IPs	DHCP Client ID:	None	-	0 10G-FD	✓ 100bt-FD
Set Offload	DNS Servers: BLANK		Peer IP:	NA		O 40G-FD Autonegotiate	1000-FD
Set Rate Info	IP Address:	10.25.0.2	Global IPv6:	ee::2:2/120		10 maintegenate	10G-FD
Set PROMISC	IP Mask:	255,255,255.0	Link IPv6:	AUTO		Renegotiate	40G-FD
Set Rx-All/FCS	Gateway IP:	0.0.0.0	IPv6 GW:	ee::2:fe		Restart Xcvr	Flow-Control
Set Bypass	Alias:		MTU:	1500		PROMISC	- Offload -
Set Bridge Info	MAC Addr:	08:00:27:d2:81:ff	TX Q Len	1000		RX-ALL	TSO Enabled
Set CPU Mask	Br Cost	lanore	Priority:	lanore		RX-FCS	UFO Enabled
- Services -	Det Time a	factor (1 c) -	Watabalaan	0		Bypass NOW!	GSO Enabled
HTTP	Rpt Timer:	Tascer (I S)	vvatchdog:			Bypass Power-UP	LRO Enabled
FIP	CPU Mask:	NO-SET	WiFi Bridge:	NONE		Bypass Power-DOWN	GRO Enabled
RADIUS						Bypass Disconnect	,

C. Here is a picture of the Port Mgr tab, with ports on two resources configured.

			VI		. V T		V D		V AL A V D AN		M	
Sta	tus	Tile-10	Layer-4	L3 E	indps	est Glou	VoIP/RTP	vigr Event Log	VoIP/RTP Endp	ps	Armageddon	WanLinks
			Disp:	127.0.0.1:1		Sni	ff Packets	Clear	ounters Re	set Port Delete		
			Rpt T	imer: faster (1	s) 🔻		Apply	View	Details C	Create Modify	Batch Modify	
							All Ethernet	Interfaces (Ports)	for all Resources			
Port	Phan	Down	Device	IP	SEC	Parent Dev	RX Bytes	Mask	Gateway IP	MAC	IPv6 Address	IPv6 Gatewa
0			eth0	192.168.100.25	0		57,355,933	255.255.255.0	192.168.100.1	08:00:27:1f:60:26	fe80::a00:27ff:fe1f:6026/64	DELETED
			eth1	0.0.0.0	0		15,694,502	0.0.0.0	0.0.0.0	08:00:27:73:6d:0d	ee::2:1/120	ee::2:fe
2			eth2	10.25.0.2	0		10,896,798	255.255.255.0	0.0.0.0	08:00:27:d2:81:ff	ee::2:2/120	ee::2:fe
)			eth0	192.168.100.55	0		2,350,089	255.255.255.0	192.168.100.1	08:00:27:2e:34:d9	fe80::a00:27ff:fe2e:34d9/64	DELETED
			eth1	10.25.0.3	0		9,268,801	255.255.255.0	0.0.0.0	08:00:27:09:fd:25	ee::2:3/120	ee::2:fe
2			eth2	10.25.0.4	0		9,260,582	255.255.255.0	0.0.0.0	08:00:27:be:da:10	ee::2:4/120	ee::2:fe

D. Verify your connection between ports using ping6: \$ ping6 -I ee::2:2%eth2 ee::2:1

B. Edit your /home/lanforge/vr_conf/nginx_eth1.conf file. You will remove the header comment and alter the listen statements to include IPv6 addresses. You can listen for [::] or you could listen for [ee::2:1]



- C. If you provide an IPv6 address, please watch the nginx log file for errors: listening on an IPv6 address is easy to misconfigure. The log files can be found in /usr/local/lanforge/nginx/logs
- D. Re-start the http service on eth1 by un-checking HTTP, clicking Apply, checking HTTP, clicking OK.
- E. Configure your Layer 4-7 endpoint:

0		Create/Modify	L4Endpoint				\odot \otimes \times
Name:	e1-100	Rpt Timer:	default (5 s)	-	Test Manager:	default_tm	-
Shelf: 1	Resource: 1 (jed-f21)	▼ Port: 2 (e	th2)	-	IP Addr:	AUTO	•
Endp Name:	1	URLs per 10m:	3600		Max Speed:	Infinite	-
Quiesce:	3 (3 sec) 💌	URL Timeout:	10000	-	DNS Cache Timeout:	60	-
TFTP Block Size:	Default (512 B) 🔻						
Proxy Port:		Proxy Server:					
Proxy Auth:							
Proxy Auth Types:	🗌 Basic 🔲 Digest 🗌 NTLM						
HTTP Compression:	🔄 Gzip 🔄 Deflate						
HTTP Auth Types:	🔄 Basic 📄 Digest 📄 GSS-N	Negotiate 🔲 NT	LM				
SSL Cert:	ca-bundle.crt						
SMTP-From:							
Agent/RCPT-TO:							
UL/DL:	Download 💌	IPv4	✓ IPv6				
URL:	http://[ee::2:1]/index.html						
Source/Dest File:	/dev/null						
Get-URLs-From-	-File Authenticate Server	Use-Proxy	Allow-Reuse		Allow-Cache 📃 Ena	able 4XX Sh	ow Headers
Bind DNS	FTP PASV FTP EPSV						
	Apply	OK	Batch-Create		Cancel		

- A. Name your endpoint
- B. Set your URLs per Minute
- C. Specify the URL with brackes around the address: http://[ee::2:1]/index.htm]
- D. Set your output file to /dev/null
- F. You can watch traffic on eth1 or eth2 to verify the web requests.

Candela Technologies, Inc., 2417 Main Street, Suite 201, Ferndale, WA 98248, USA www.candelatech.com | sales@candelatech.com | +1.360.380.1618