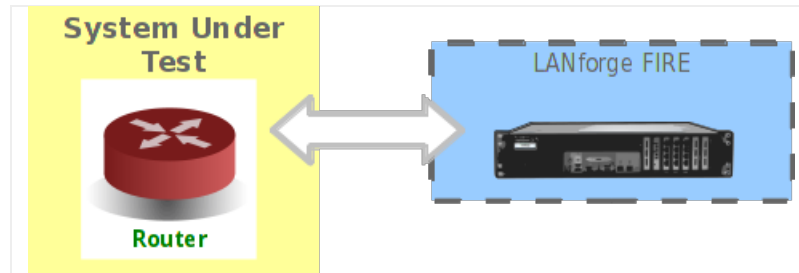


Generating Traffic to a Routed Network

Goal: Set up and run traffic on a routed network.

In this test scenario, LANforge-FIRE is used to generate traffic to a basic router in order to test throughput.



1. Connect one LANforge-FIRE port to the router's LAN port.
2. Connect another LANforge-FIRE port to the router's WAN port.
3. Set up the LANforge ports so that they have valid IP addresses. You can also use DHCP if the DUT supports it.
 - A. Go to the Port Manager

LANforge Manager Version(5.2.10)

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

Disp: 192.168.100.27:0.0 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	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX
1.1.0			192.168.100.129	0	eth2	189,810	2,121	3	2,984	144,274	276	1	8,932
1.1.1			0.0.0.0	0	eth1	15,192	67	0	0	21,382	145	0	0
1.1.2			0.0.0.0	0	eth3	9,594	31	0	0	13,259	67	0	0
1.1.3			0.0.0.0	0	eth4	9,094	31	0	0	15,137	73	0	0

Logged in to: 192.168.100.129:4002 as: Admin

B. Modify port for Endpoint A (eth3). Set a valid network IP Address and Gateway IP.

eth3 (ubuntu) Configure Settings

Port Status Information
Current: LINK-UP 1000bt-FD AUTO-NEGOTIATE Flow-Control TSO GSO GRO
Driver Info: Port Type: Ethernet Driver: e1000(7.3.21-k8-NAPI) Bus: 0000:00:0a:0

Port Configurables

General Interface Settings

Enable

- ☒ Set IP Info
- ☒ Set IP6 Info
- ☐ 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
- ☐ Set CPU Mask

Services

- ☐ HTTP
- ☐ FTP

General Interface Settings

☐ DHCP-IPv6 ☒ DHCP Release ☐ Down ☐ Aux-Mgt

☐ DHCP-IPv4 **Secondary-IPs** DHCP Client ID:

DNS Servers: Peer IP:

IP Address: Global IPv6:

IP Mask: Link IPv6:

Gateway IP: IPv6 GW:

Alias: MTU:

MAC Addr: TX Q Len:

Br Cost: Priority:

Rpt Timer: Watchdog:

CPU Mask: WiFi Bridge:

Port Rates

- ☐ 10bt-HD
- ☐ 10bt-FD
- ☐ 100bt-HD
- ☐ 100bt-FD
- ☐ 1000-FD
- ☐ 10G-FD
- ☒ Autonegotiate

☐ Renegotiate

☐ Restart Xcvr

☐ PROMISC

☐ RX-ALL

☐ RX-FCS

☐ Bypass NOW!

☐ Bypass Power-UP

☐ Bypass Power-DOWN

☐ Bypass Disconnect

Advertise Ra...

- ☒ 10bt-HD
- ☒ 10bt-FD
- ☒ 100bt-HD
- ☒ 100bt-FD
- ☒ 1000-FD
- ☐ 10G-FD
- ☒ Flow-Control

Offload

- ☒ TSO Enabled
- ☐ UFO Enabled
- ☒ GSO Enabled
- ☐ LRO Enabled
- ☒ GRO Enabled

Buttons: Print View Details Probe Sync Apply OK Cancel

C. Modify port for Endpoint B (eth4). Set a valid network IP Address and Gateway IP.

eth4 (ubuntu) Configure Settings

Port Status Information
Current: LINK-UP 1000bt-FD AUTO-NEGOTIATE Flow-Control TSO GSO GRO
Driver Info: Port Type: Ethernet Driver: e1000(7.3.21-k8-NAPI) Bus: 0000:00:09.0

Port Configurables

General Interface Settings

Enable

- ☒ Set IP Info
- ☒ Set IP6 Info
- ☐ 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
- ☐ Set CPU Mask

Services

- ☐ HTTP
- ☐ FTP

General Interface Settings

☐ DHCP-IPv6 ☒ DHCP Release ☐ Down ☐ Aux-Mgt

☐ DHCP-IPv4 **Secondary-IPs** DHCP Client ID:

DNS Servers: Peer IP:

IP Address: Global IPv6:

IP Mask: Link IPv6:

Gateway IP: IPv6 GW:

Alias: MTU:

MAC Addr: TX Q Len:

Br Cost: Priority:

Rpt Timer: Watchdog:

CPU Mask: WiFi Bridge:

Port Rates

- ☐ 10bt-HD
- ☐ 10bt-FD
- ☐ 100bt-HD
- ☐ 100bt-FD
- ☐ 1000-FD
- ☐ 10G-FD
- ☒ Autonegotiate

☐ Renegotiate

☐ Restart Xcvr

☐ PROMISC

☐ RX-ALL

☐ RX-FCS

☐ Bypass NOW!

☐ Bypass Power-UP

☐ Bypass Power-DOWN

☐ Bypass Disconnect

Advertise Ra...

- ☒ 10bt-HD
- ☒ 10bt-FD
- ☒ 100bt-HD
- ☒ 100bt-FD
- ☒ 1000-FD
- ☐ 10G-FD
- ☒ Flow-Control

Offload

- ☒ TSO Enabled
- ☐ UFO Enabled
- ☒ GSO Enabled
- ☐ LRO Enabled
- ☒ GRO Enabled

Buttons: Print View Details Probe Sync Apply OK Cancel

D. Verify the port configuration

LANforge Manager Version(5.2.10)

Control Reporting Tear-Off Info Plugins

Buttons: Stop All Restart Manager Refresh HELP

Tabs: File-IO 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

Disp: Sniff Packets Clear Counters Reset Port Delete

Rpt Timer: Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

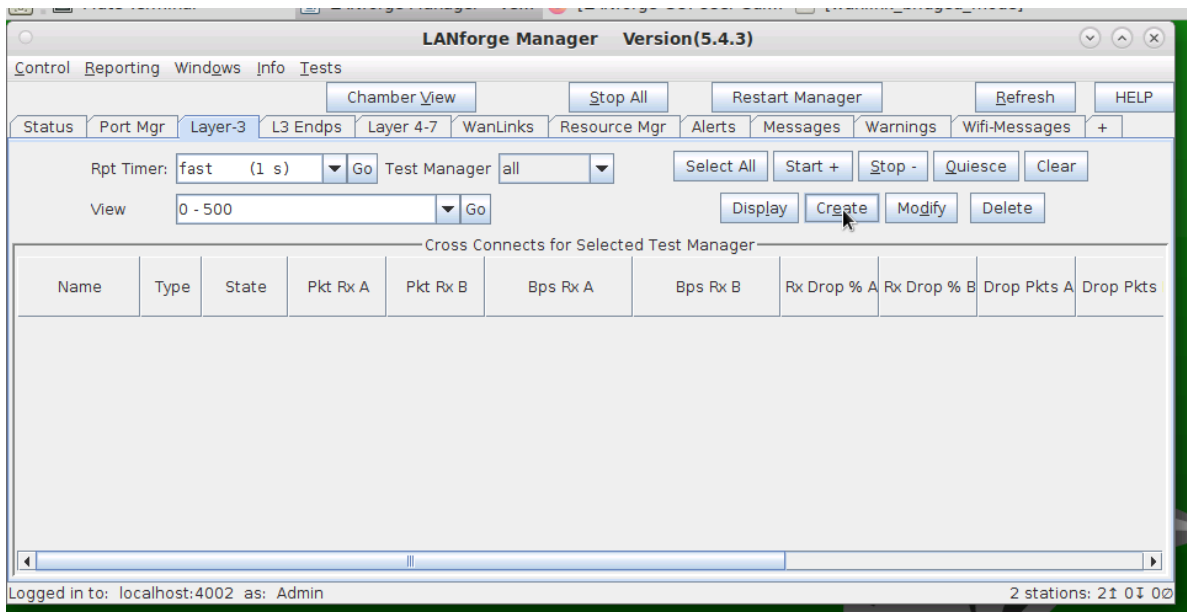
Port	Pha...	Down	IP	SEC	Alias	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX	Collis
1.1.0	<input type="checkbox"/>	<input type="checkbox"/>	192.168.100.129	0	eth2	682,954	6,865	5	4,110	1,370,419	2,297	2	9,827	
1.1.1	<input type="checkbox"/>	<input type="checkbox"/>	0.0.0.0	0	eth1	15,192	67	0	0	21,382	145	0	0	
1.1.2	<input type="checkbox"/>	<input type="checkbox"/>	192.168.2.102	0	eth3	16,407	59	0	0	21,575	107	0	0	
1.1.3	<input type="checkbox"/>	<input type="checkbox"/>	172.16.1.103	0	eth4	13,085	46	0	0	22,648	110	0	0	

Logged in to: 192.168.100.129:4002 as: Admin

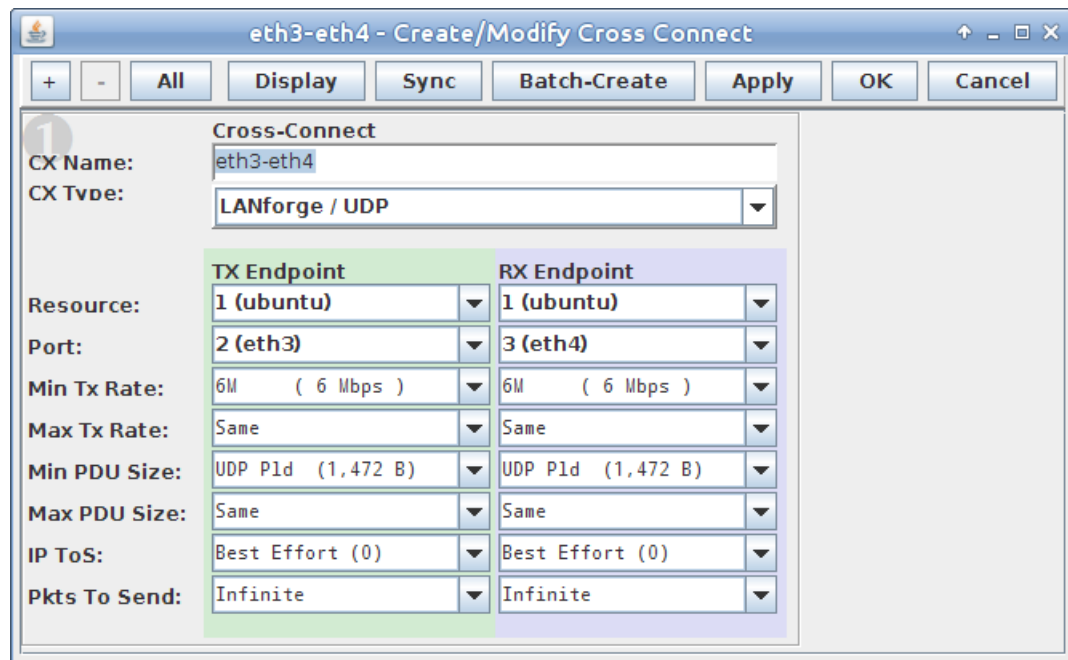
For more information see [LANforge User's Guide: Ports\(Interfaces\)](#)

4. Create a Layer-3 connection using the two configured ports.

A. Go to the **Layer-3** tab



B. Create a new Cross-Connect



C. Verify the new Cross-Connect

For more information see [LANforge User's Guid: Layer-3 Cross-Connects \(FIRE\)](#)

5. Run traffic and determine router throughput.

A. Select the cross-connect on the **Layer-3** tab, click **Start** and then **Display**

LANforge Manager Version(5.2.10)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-IO 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: fast (1 s) Go Test Manager all Select All Start Stop Quiesce Clear

View 0 - 200 Go Display Create Modify Delete

Cross Connects for Selected Test Manager

Name	Type	State	Pkt Tx A->B	Pkt Tx A<-B	Rate A->B	Rate A<-B	Rx Drop ...	Rx Drop ...	Drop Pkt...	Drop Pkt...	Avg RTT	Rpt Timer
eth3-eth4	LF/UDP	Run	98	98	60,583	60,260	100	100	97	98	0	1000

Logged in to: 192.168.100.129:4002 as: Admin

B. View the Layer-3 cross-connect display

Cross Connect: eth2-eth3 Manager: 192.168.100.129

Endpoint: eth2-eth3-A

Port: ubuntu EID: 1.1.2.5 RT-Lat: 1.11934 1W-Lat: 2.253

Port: eth2 192.168.2.102 Min TX: 6 Mbps Max TX: 6 Mbps Avg: 0.29 Avg: 0

bps TX: 1.192 Mbps RX Rate: 5.049 Mbps

PPS Tx: 98 RX Pkts: 12058

bps RX: 1.141 Mbps RX Drop: 0

PPS RX: 94 TX Pkts: 13058

Errors: 0 Type: LF/UDP

Endpoint: eth2-eth3-B

Port: ubuntu EID: 1.1.3.6 RT-Lat: 1.9431 1W-Lat: 2.2652

Port: eth3 172.16.1.103 Min TX: 6 Mbps Max TX: 6 Mbps Avg: 0.28 Avg: 0

bps TX: 1.146 Mbps RX Rate: 5.317 Mbps

PPS Tx: 94 RX Pkts: 12649

bps RX: 1.198 Mbps RX Drop: 0

PPS RX: 100 TX Pkts: 12108

Errors: 0 Type: LF/UDP

Pause Display Print Stop Sync Dynamic Report Modify Clear Close

For more information see [LANforge User's Guid: Layer-3 Cross-Connect Display](#)

6. For this example, a low performance router was used to illustrate poor throughput, variable latency, and dropped packets.

A. Go to the **L3 Endps** tab

LANforge Manager Version(5.2.10)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Collision-Domains File-IO 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

Min PDU Size 1k (1,024 B) Go Max PDU Size Same Go Start Stop Quiesce Clear

MIN Tx Rate New Modem (56 Kbps) Go MAX Tx Rate Same Go Display Create Modify Batch Modify Delete

View 0 - 400 Go

All Endpoints

Name	EID	Run	Mng	Script	Tx Rate	Tx Rate(1)	Rx Rate	Rx Rate(1)	Rx Drop %	Tx Pkts	Rx Pkts	Delay	Dropped	Jitter	Tx Bytes	Rx Bytes
eth2-eth3-A	1.1.2.5			None	5,290,694	0	5,067,477	0	0.01	30,789	29,490	0	0	0	0.45,321,408	43,409,280
eth2-eth3-B	1.1.3.6			None	5,067,993	0	5,290,006	0	0.013	29,493	30,785	1	0	0	0.43,413,696	45,315,520

Logged in to: 192.168.100.129:4002 as: Admin

B. Scroll to the right to view Latency and Dropped Packets

LANforge Manager Version(5.2.10)

Control Reporting Tear-Off Info Plugins

Stop AllRestart ManagerRefreshHELP

Collision-DomainsFile-IOLayer-4GenericTest MgrTest GroupResource MgrEvent LogAlertsPort MgrMessages

StatusLayer-3L3 EndpsVoIP/RTPVoIP/RTP EndpsArmageddonWanLinksAttenuators

Min PDU Size1k(1,024 B)Go

Max PDU SizeSameGo

StartStopQuiesceClear

MIN Tx RateNew Modem (56 Kbps)Go

MAX Tx RateSameGo

DisplayCreateModifyBatch ModifyDelete

View0 - 400Go

All Endpoints

	Pattern	Min PDU	Max PDU	Min Rate	Max Rate	Send-Buf	Rcv-Buf	CWND	TCP-MSS	Bursty	A/B	Elapsed	Destination Addr	Source Addr
0	INCREASING	1,472	1,472	6,000,000	6,000,000	0/64000	0/256000	0	0/0	<input type="checkbox"/>	A	68	172.16.1.103 33008	192.168.2.102 33007
0	INCREASING	1,472	1,472	6,000,000	6,000,000	0/64000	0/256000	0	0/0	<input type="checkbox"/>	B	68	192.168.2.102 33007	172.16.1.103 33008

Logged in to: 192.168.100.129:4002 as: Admin

For more information see [LANforge User's Guid: Layer-3 Endpoints \(FIRE\)](#)

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