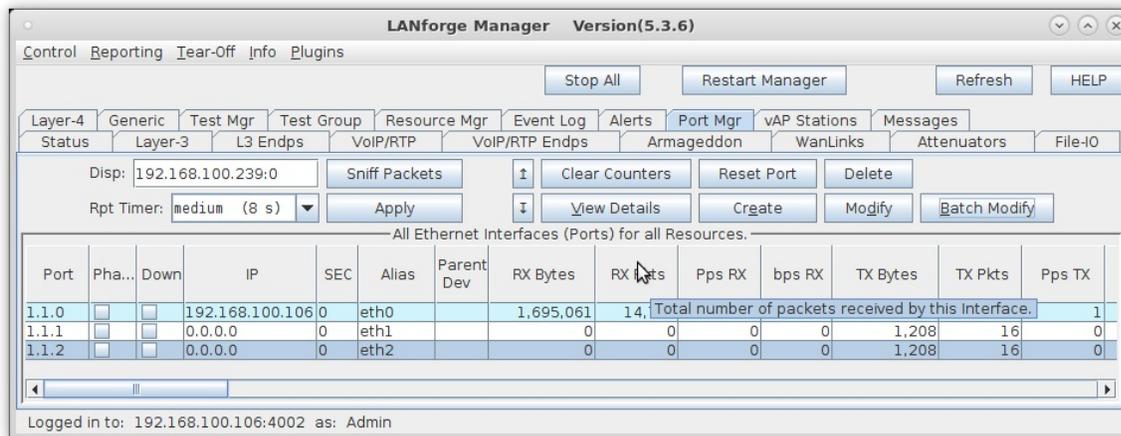


Bridged Mode (Non-routed) WanLink

Goal: Allow LANforge-ICE to sit transparently on a network segment by using a Bridged Mode WanLink to simulate a WAN.

In this test scenario, a LANforge-ICE WanLink is created in Bridged Mode to simulate a WAN consisting of a DS1 speed (1.544Mbps) link with 20ms of delay in one direction and 30ms of delay in the other direction.

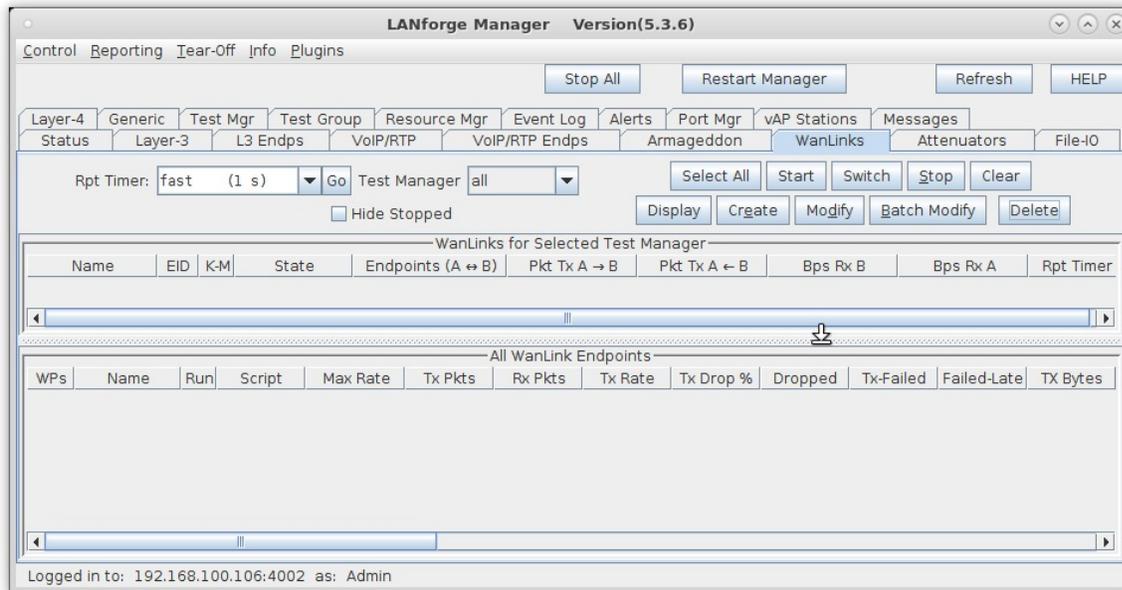
1. Setup the LANforge Ports so that they have 0.0.0.0 IP addresses. (Bridged Mode WanLinks use ports that have no IP address because the ports are transparent to the traffic flowing through them.)
 - A. A: Go to the Port Manager to see what ports are available. In this example, we will use eth1 and eth2. eth0 is the management port and cannot be used for WanLinks.



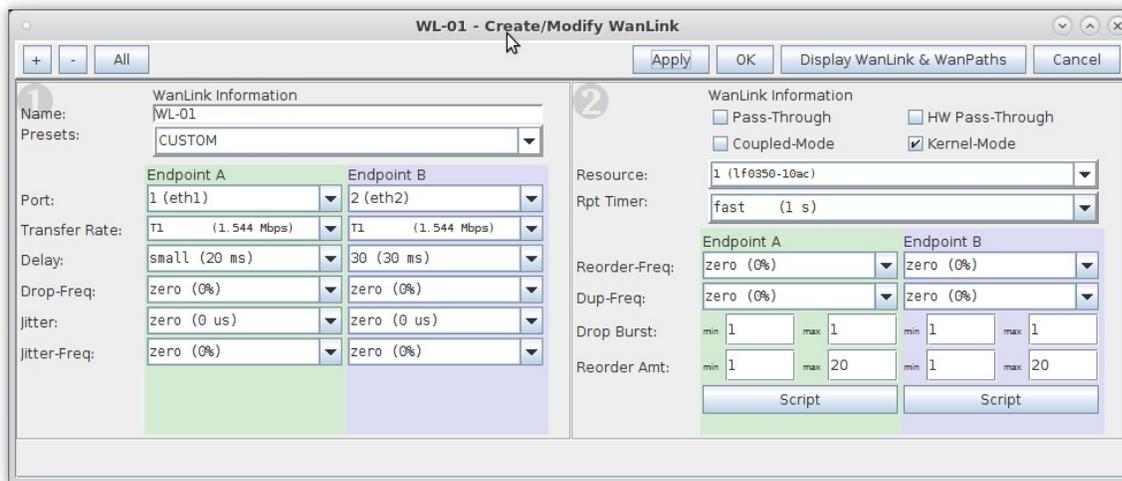
For more information see [LANforge-GUI User Guide: Ports \(Interfaces\)](#)

2. Create a WanLink.

A. Go to the **WanLinks** tab



B. Create a WanLink



- A. To simulate a WAN, enter a specific amount of delay or other impairment
- B. For this example, enter 20ms of delay for Entry Point A and 30ms of delay for Entry Point B
- C. Be sure to set the correct ports and transfer rate for each Entry Point
- D. Click **OK** when done

C. Verify the WanLink was created

LANforge Manager Version(5.3.6)

Control Reporting Tear-Off Info Plugins

Stop All Start Manager Refresh HELP

WARNING: This will restart the server processes!

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-I/O

Rpt Timer: fast (1 s) Go Test Manager all

Select All Start Switch Stop Clear

Display Create Modify Batch Modify Delete

Hide Stopped

WanLinks for Selected Test Manager

Name	EID	K-M	State	Endpoints (A ↔ B)	Pkt Tx A → B	Pkt Tx A ← B	Bps Rx B	Bps Rx A	Rpt Timer
WL-01	6.2	<input checked="" type="checkbox"/>	Stopped	WL-01-A ↔ WL-01-B	0	0	1,544,000	1,544,000	1,000

All WanLink Endpoints

WPs	Name	Run	Script	Max Rate	Tx Pkts	Rx Pkts	Tx Rate	Tx Drop %	Dropped	Tx-Failed	Failed-Late	TX Bytes
+	WL-01-A	<input type="checkbox"/>	None	1,544,000	0	0	0	0	0	0	0	0
+	WL-01-B	<input type="checkbox"/>	None	1,544,000	0	0	0	0	0	0	0	0

Logged in to: 192.168.100.106:4002 as: Admin

D. Go to the **Status** tab and click **Netsmith** to view the graphical representation of the WanLink

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-I/O

License Info

Licenses expire in: 343 days.

Support expires in: 343 days.

Current Users

- * Admin from:192.168.100.239
- gnusever from:127.0.0.1

Test Configuration Database

List: BLANK Load

Name: Delete

Load Behavior: Choose One Save

Download DB Show Progress

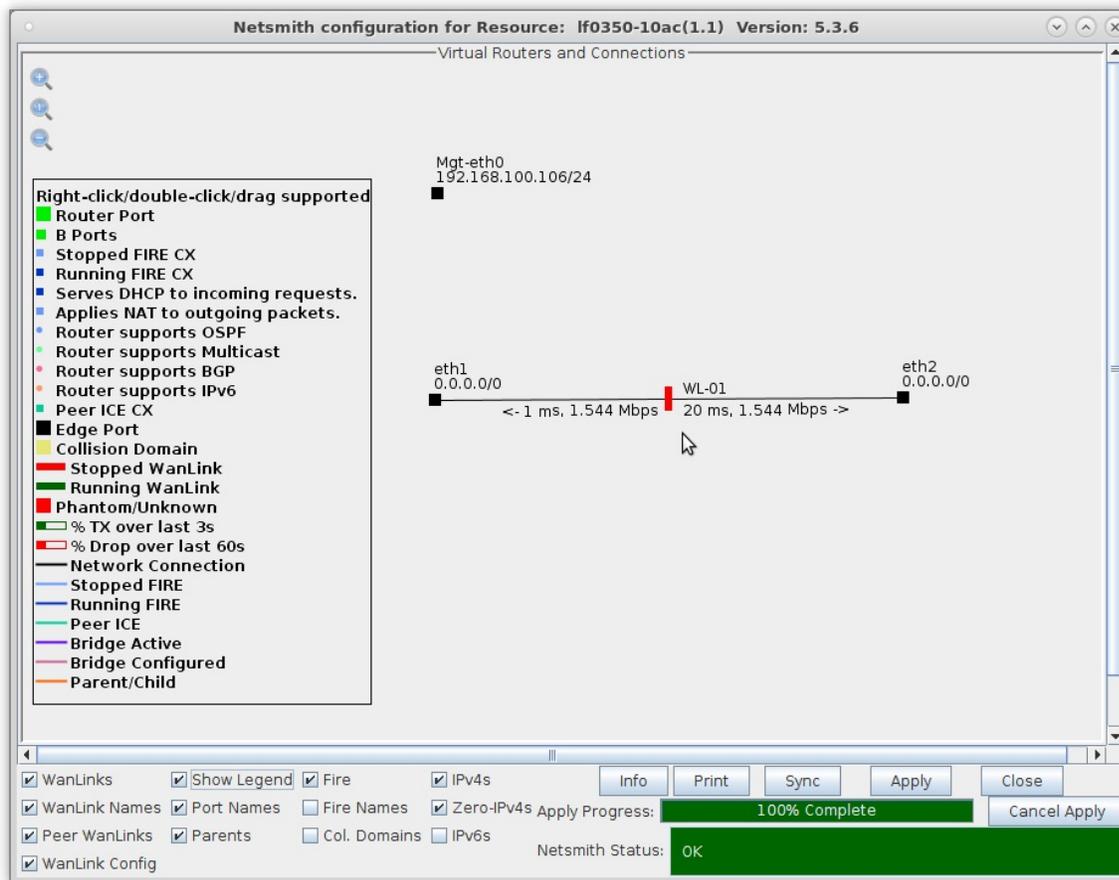
Virtual Shelf 1

Resource 1

Netsmith

Logged in to: 192.168.100.106:4002 as: Admin

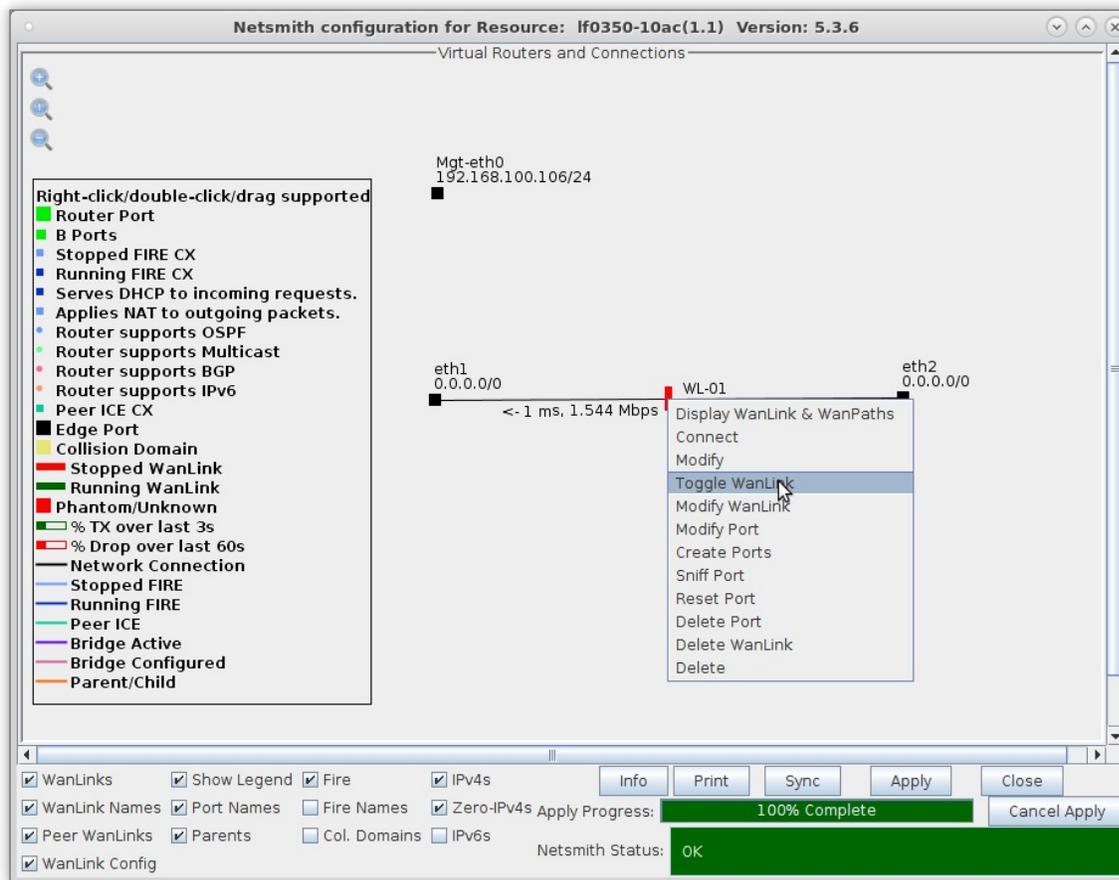
- E. This is the general form of a Bridged Mode WanLink in Netsmith. It consists of two 0.0.0.0 IP addressed ports with a vertical bar between them.



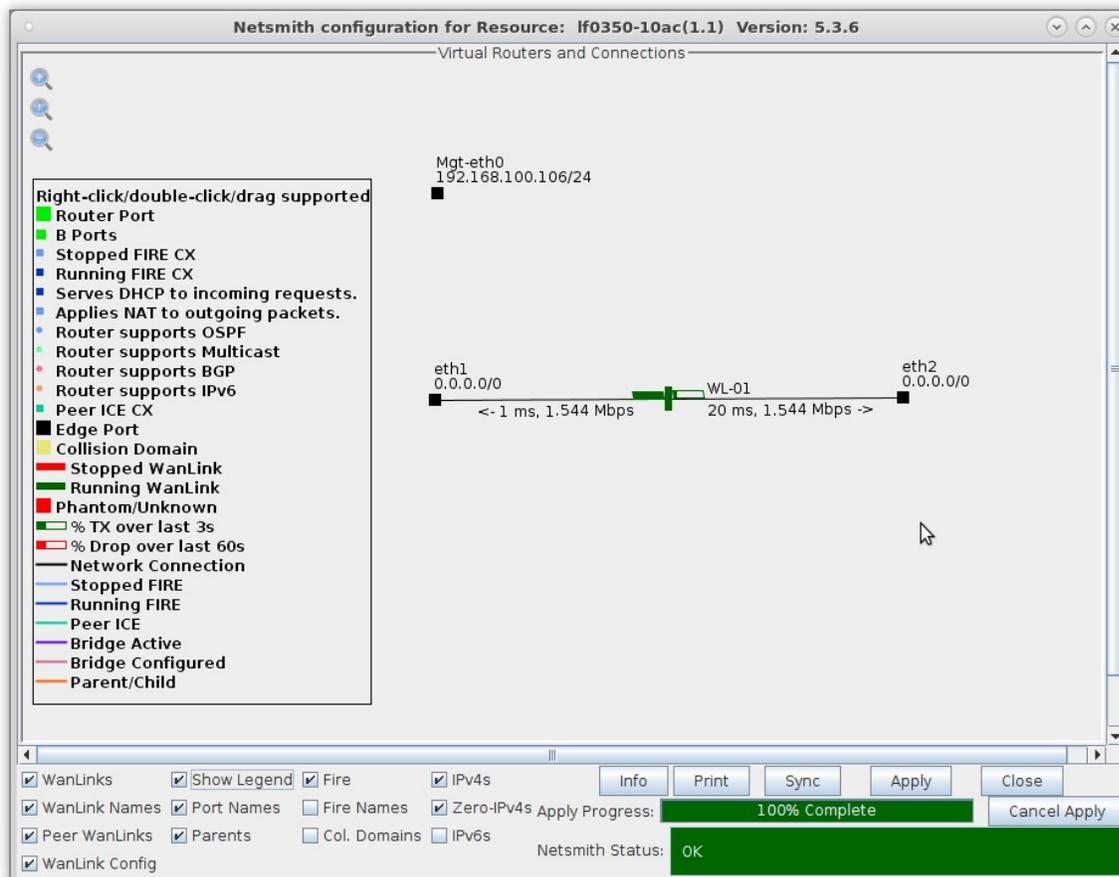
For more information see [LANforge-GUI User Guide: WanLinks \(ICE\)](#)

3. Run traffic and verify results.

- A. Right-click on the WanLink and select **Toggle WanLink** to allow traffic to flow from a transmitting device to a receiving device

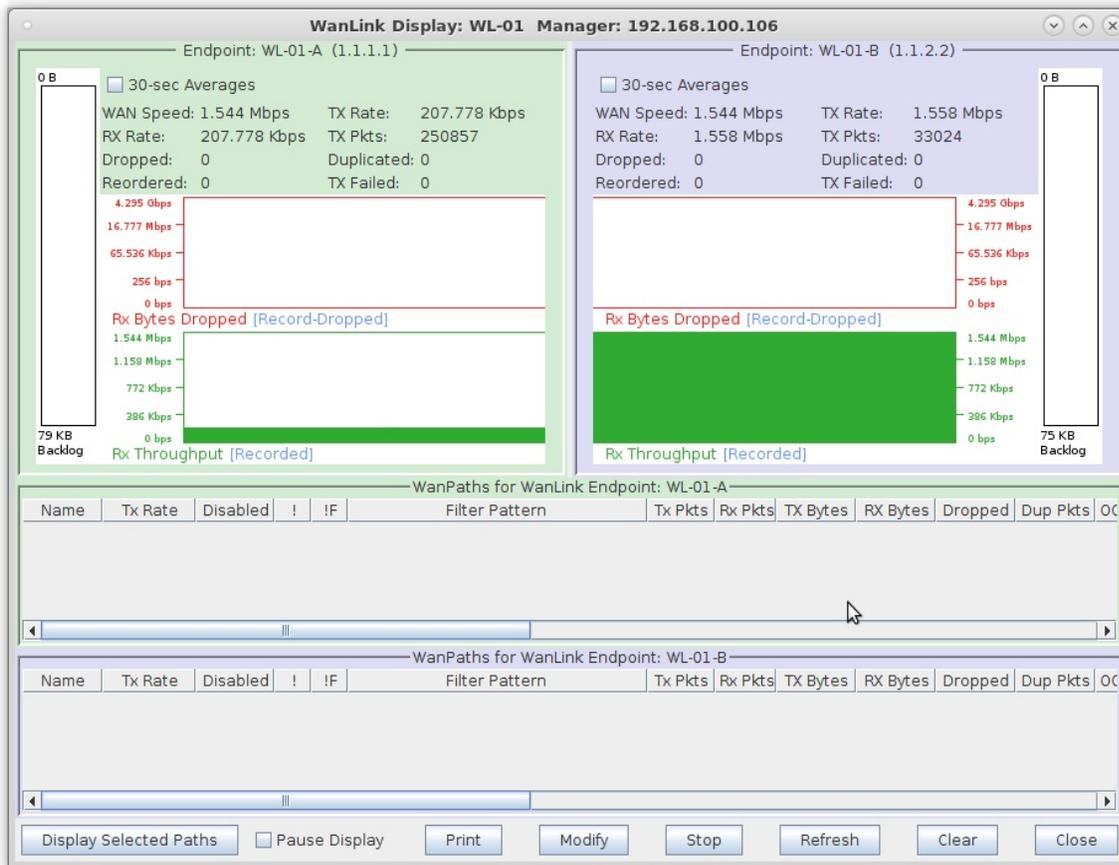


- B. The transmitting/receiving devices can be just about anything that generates and receives traffic such as a web server and client or a pair of LANforge-FIRE ports.



- A. Right-click the WanLink and select **Display WanLink**

C. View the WanLink display



For more information see [Refer to the LANforge FIRE Cookbook to run traffic.](#)

4. View the **WanLinks** tab

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-I/O

Rpt Timer: fast (1 s) Go Test Manager all

Select All Start Switch Stop Clear

Hide Stopped Display Create Modify Batch Modify Delete

WanLinks for Selected Test Manager

Name	EID	K-M	State	Endpoints (A ↔ B)	Pkt Tx A → B	Pkt Tx A ← B	Bps Rx B	Bps Rx A	Rpt Timer
WL-01	6.2	<input checked="" type="checkbox"/>	Run	WL-01-A ↔ WL-...	63,510	479,506	1,544,000	1,544,000	1,000

All WanLink Endpoints

WPs	Name	Run	Script	Max Rate	Tx Pkts	Rx Pkts	Tx Rate	Tx Drop %	Dropped	Tx-Failed	Failed-Late	TX Bytes	RX Bytes
+ WL-01-A		<input checked="" type="checkbox"/>	None	1,544,000	479,506	63,516	1,545,125	0	0	0	0	42,183,816	5,588,544
+ WL-01-B		<input checked="" type="checkbox"/>	None	1,544,000	63,510	479,512	206,004	0	0	0	0	5,588,016	42,184,344

Logged in to: 192.168.100.106:4002 as: Admin

- Selecting a WanLink automatically selects the WanLink Endpoints on the bottom panel
- Scroll to the right on the bottom panel to note the Serialization Delay (delay injected by LANforge to account for packet size and transfer rate). Also, the WanLink must have a high enough transfer rate to pass all the traffic. In other words, if a layer-3 connection is sending 100Mbps of traffic, the WanLink must allow at least 100Mbps transfer rate
- In this case, $SD = (1514 \text{ bytes} * 8 \text{ bits/byte}) / 1.544\text{Mbps} = 7.8\text{ms}$
- The total delay as experienced by the transmitting/receiving device is the sum of the WanLink configured delay and the serialization delay which in this case would be about 28ms in one direction and 38ms in the other.

For more information see [LANforge FAQ: Serialization Delay](#)

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