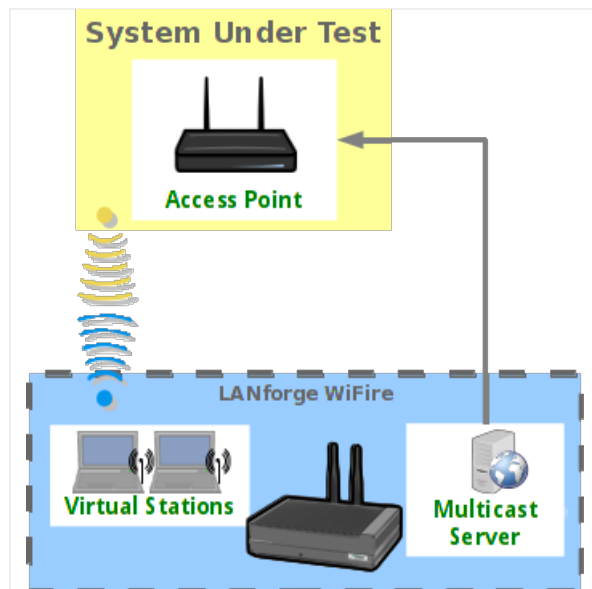
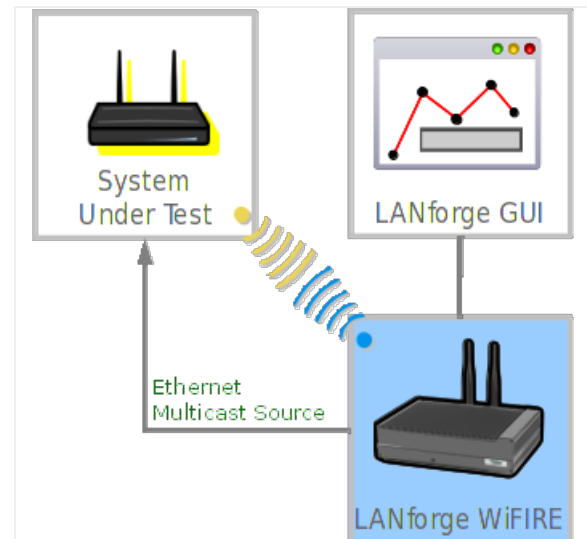


## Test WiFi Multicast Download.

**Goal:** Test WiFi Multicast Download.

Test WiFi Multicast Download with a small number of stations. This example uses a pair of LANforge CT520 systems, but the procedure should work on all CT521, CT522, CT523 and CT525 systems. Multicast is a bit special in Wireless networks. Packets are normally transmitted at the lowest rate, so even a small bit of multicast traffic will slow down the entire network. In this example, we will transmit multicast frames from the AP to the stations. Many users will instead use the wired Ethernet port as the transmitter, but aside from the different port, the procedure should be the same. This example assumes you have already created and configured the desired amount of WiFi station interfaces.



### 1. Create Multicast transmitter on AP interface

- A. Go to the **L3 Endps** tab, and click **Create**. Set the IGMP Addr, IGMP Dest Port, name, PDU Size, Port, etc and click OK when done.

**Create/Modify Endpoint**

Endp Type: **Multicast** Rpt Timer: **fast (1 s)**

IGMP Addr: **224.9.9.9** IGMP Dest Port: **9999** IGMP Source IP:  IGMP Source Port:

Endp Name: **mcast-xmit-sta** Shelf: **1** Resource: **1 (brent-521)** Port: **6 (sta0)**

Pld Pattern: **increasing** IP Addr: **AUTO** Min IP Port: **9999** Max IP Port: **Same**

Min Tx Rate: **4Mbps** Max Tx Rate: **Same** Min PDU Size: **UDP Pld (1,472 B)** Max PDU Size: **Same**

IP ToS: **Best Effort (0)** Pkts To Send: **Infinite** TTL: **32** Quiesce: **3 (3 sec)**

Min Duration: **Forever** Max Duration: **Same** Min Reconn: **0 (0 ms)** Max Reconn: **Same**

Multi-Conn: **Normal (0)** Filename:  Dest MAC: **<custom>**

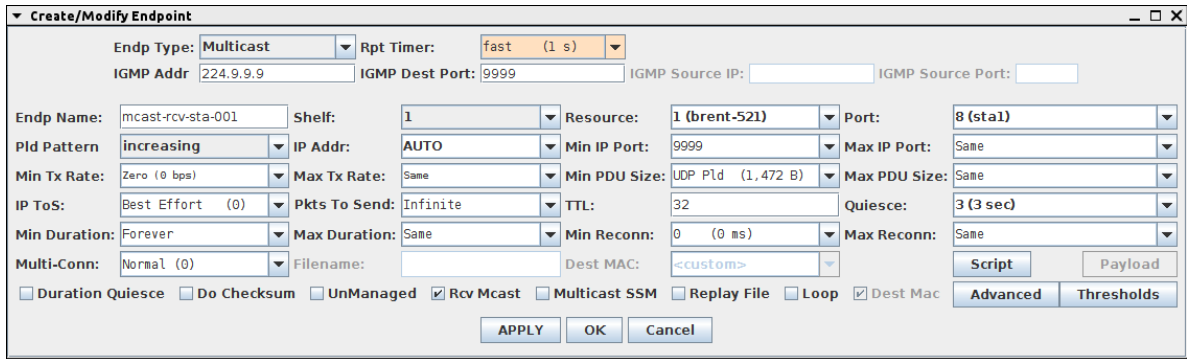
☐ Duration Quiesce ☐ Do Checksum ☐ UnManaged ☐ Rcv Mcast ☐ Multicast SSM ☐ Replay File ☐ Loop ☒ Dest Mac

**Script** **Payload** **Advanced** **Thresholds**

**APPLY** **OK** **Cancel**

## 2. Create Multicast receivers on Station interfaces

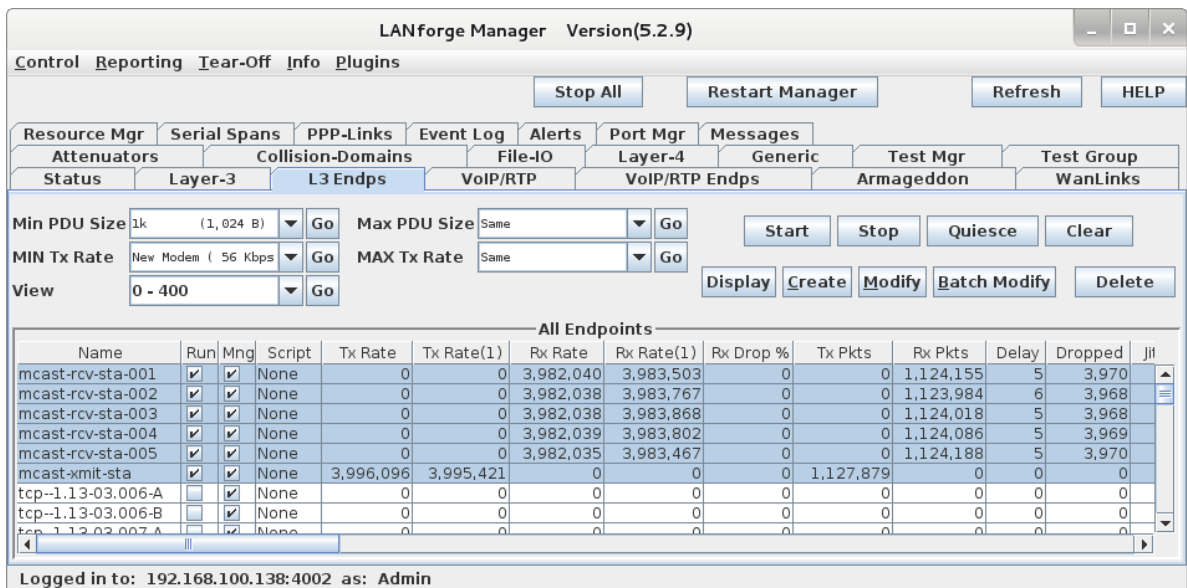
- A. Go to the **L3 Endps** tab, and click **Create**. Set the IGMP Addr, Min IP Port, name, Port. The IGMP Addr and Port should match the transmitter. Make sure you also select the 'Rcv Mcast' checkbox. Click **Apply** when done. You can then change the name, change the Port, and click **Apply** again to create a duplicate endpoint on another station interface.



The 'Create/Modify Endpoint' dialog box is shown. It has a title bar with a minus, maximize, and close button. The 'Endp Type' is set to 'Multicast'. 'Rpt Timer' is 'fast (1 s)'. 'IGMP Addr' is '224.9.9.9' and 'IGMP Dest Port' is '9999'. 'IGMP Source IP' and 'IGMP Source Port' are empty. 'Endp Name' is 'mcast-rcv-sta-001', 'Shelf' is '1', 'Resource' is '1 (brent-521)', and 'Port' is '8 (sta1)'. 'Pld Pattern' is 'increasing', 'IP Addr' is 'AUTO', 'Min IP Port' is '9999', and 'Max IP Port' is 'Same'. 'Min Tx Rate' is 'Zero (0 bps)', 'Max Tx Rate' is 'Same', 'Min PDU Size' is 'UDP Pld (1,472 B)', and 'Max PDU Size' is 'Same'. 'IP ToS' is 'Best Effort (0)', 'Pkts To Send' is 'Infinite', 'TTL' is '32', and 'Quiesce' is '3 (3 sec)'. 'Min Duration' is 'Forever', 'Max Duration' is 'Same', 'Min Recon' is '0 (0 ms)', and 'Max Recon' is 'Same'. 'Multi-Conn' is 'Normal (0)' and 'Filename' is empty. 'Dest MAC' is '<custom>'. There are checkboxes for 'Duration Quiesce', 'Do Checksum', 'UnManaged', 'Rcv Mcast' (checked), 'Multicast SSM', 'Replay File', 'Loop', and 'Dest Mac' (checked). There are buttons for 'Script', 'Payload', 'Advanced', and 'Thresholds'. At the bottom are 'APPLY', 'OK', and 'Cancel' buttons.

## 3. Test throughput

- A. Select the Multicast transmitter and receiver endpoints on the **L3 Endps** tab and click **Start**. Observe transmit and receive rates, packet-loss, and other statistics to verify performance is at expected value.



The LANforge Manager Version(5.2.9) interface is shown. It has a title bar with a minus, maximize, and close button. The 'Control' tab is selected. There are buttons for 'Stop All', 'Restart Manager', 'Refresh', and 'HELP'. There are tabs for 'Resource Mgr', 'Serial Spans', 'PPP-Links', 'Event Log', 'Alerts', 'Port Mgr', and 'Messages'. There are sub-tabs for 'Attenuators', 'Collision-Domains', 'File-IO', 'Layer-4', 'Generic', 'Test Mgr', and 'Test Group'. The 'L3 Endps' sub-tab is selected. There are buttons for 'Start', 'Stop', 'Quiesce', and 'Clear'. There are buttons for 'Display', 'Create', 'Modify', 'Batch Modify', and 'Delete'. There is a table titled 'All Endpoints' with columns: Name, Run, Mng, Script, Tx Rate, Tx Rate(1), Rx Rate, Rx Rate(1), Rx Drop %, Tx Pkts, Rx Pkts, Delay, Dropped, and Jit. The table contains 10 rows of data. At the bottom, it says 'Logged in to: 192.168.100.138:4002 as: Admin'.

Name	Run	Mng	Script	Tx Rate	Tx Rate(1)	Rx Rate	Rx Rate(1)	Rx Drop %	Tx Pkts	Rx Pkts	Delay	Dropped	Jit
mcast-rcv-sta-001	✓	✓	None	0	0	3,982,040	3,983,503	0	0	1,124,155	5	3,970	
mcast-rcv-sta-002	✓	✓	None	0	0	3,982,038	3,983,767	0	0	1,123,984	6	3,968	
mcast-rcv-sta-003	✓	✓	None	0	0	3,982,038	3,983,868	0	0	1,124,018	5	3,968	
mcast-rcv-sta-004	✓	✓	None	0	0	3,982,039	3,983,802	0	0	1,124,086	5	3,969	
mcast-rcv-sta-005	✓	✓	None	0	0	3,982,035	3,983,467	0	0	1,124,188	5	3,970	
mcast-xmit-sta	✓	✓	None	3,996,096	3,995,421	0	0	0	1,127,879	0	0	0	0
tcp-1.13-03.006-A	✓	✓	None	0	0	0	0	0	0	0	0	0	0
tcp-1.13-03.006-B	✓	✓	None	0	0	0	0	0	0	0	0	0	0
tcp-1.13-03.007-A	✓	✓	None	0	0	0	0	0	0	0	0	0	0
tcp-1.13-03.007-B	✓	✓	None	0	0	0	0	0	0	0	0	0	0