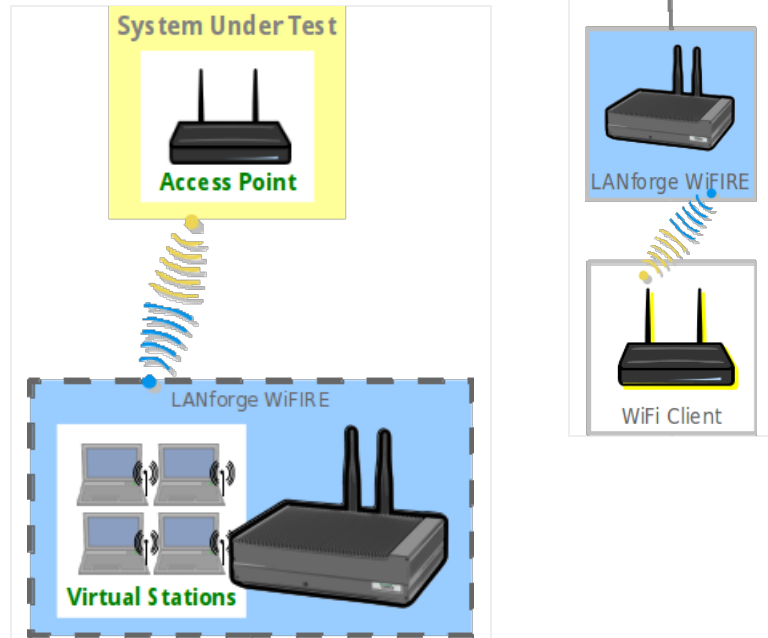


Generating Traffic to saturate a particular WiFi Channel

Goal: Setup and run Wireless LAN traffic using the LANforge CT523 in order to fully saturate a WiFi channel.

In this test scenario, the LANforge CT523 is used to simulate 4 virtual wireless stations on one radio that associate with an access point on the other radio. This allows a single LANforge machine to be a complete WiFi network. Please see the [Wifi Testing](#) cookbook example first. These steps assume the configuration from that cookbook is already in place.



1. Create a virtual AP on wiphy1.
 - A. Go to the Port Manager

LANforge Manager Version(5.2.8)

Control Reporting Tear-Off Info

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Serial Spans PPP-Links Event Log Alerts Port Mgr Messages

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

Disp: 192.168.100.226:0.0 Sniff Packets Clear Counters Reset Port Delete

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

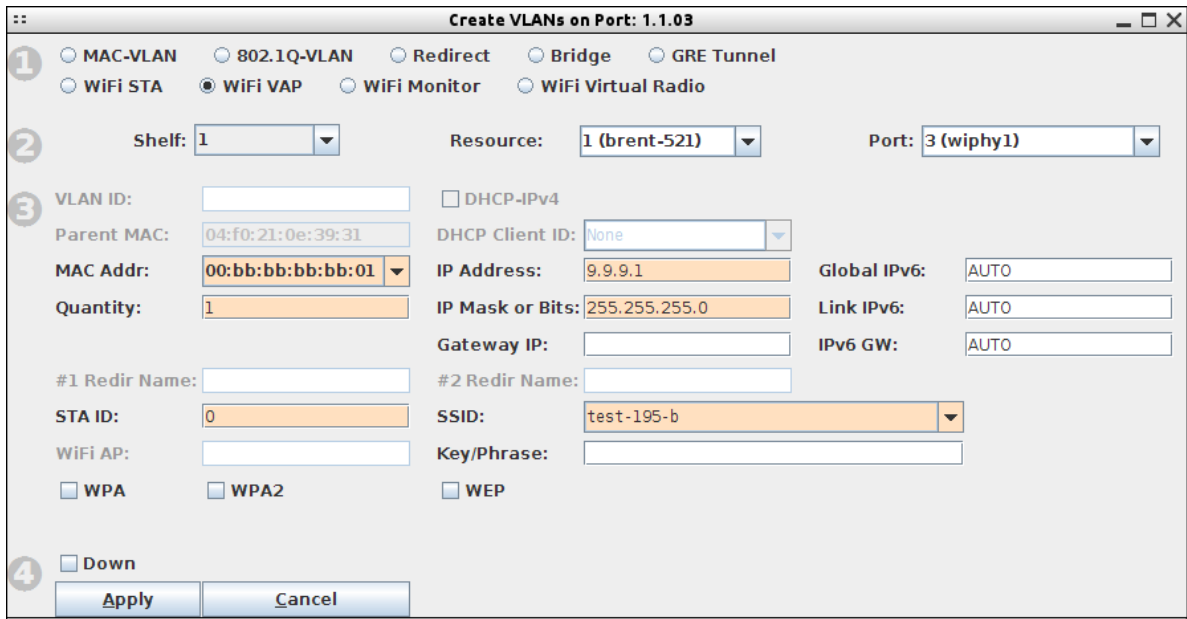
All Ethernet Interfaces (Ports) for all Resources.

Port	Phan...	Down	IP	SEC	Alias	RX Bytes	RX Pkts	Pps RX	bps RX	Tx Bytes	Tx Pkts	Pps TX	bps TX	Collisions	RX Errors	TX
1.1.00			192.168.100.195	0	eth0	7,727,370	64,318	6	6,344	57,278,...	60,456	5	39,562	0	0	0
1.1.01			195.195.195.1	0	eth1	1,617,516	9,710	1	2,170	6,178	69	0	9	0	0	0
1.1.02			0.0.0.0	0	wiphy0	13,199,...	8,860,551	4	5,371	12,411,...	8,349,175	0	26	134,617	0	0
1.1.03			0.0.0.0	0	wiphy1	0	0	0	0	0	0	0	0	0	0	0
1.1.04			0.0.0.0	0	wlan0	0	0	0	0	0	0	0	0	0	0	0
1.1.05			0.0.0.0	0	wlan1	0	0	0	0	0	0	0	0	0	0	0
1.1.06			172.16.0.130	0	sta0	487,433,...	459,603	0	0	11,898,...	7,888,977	0	0	0	0	0
1.1.07			172.16.0.131	0	sta1	11,734,...	7,885,305	0	0	496,698,...	459,664	0	0	0	0	0
1.1.08			172.16.0.132	0	sta2	5,350	39	0	0	1,470	11	0	0	0	0	0
1.1.09			172.16.0.133	0	sta3	3,700	30	0	0	1,470	11	0	0	0	0	0

Logged in to: 192.168.100.195:4002 as: Admin

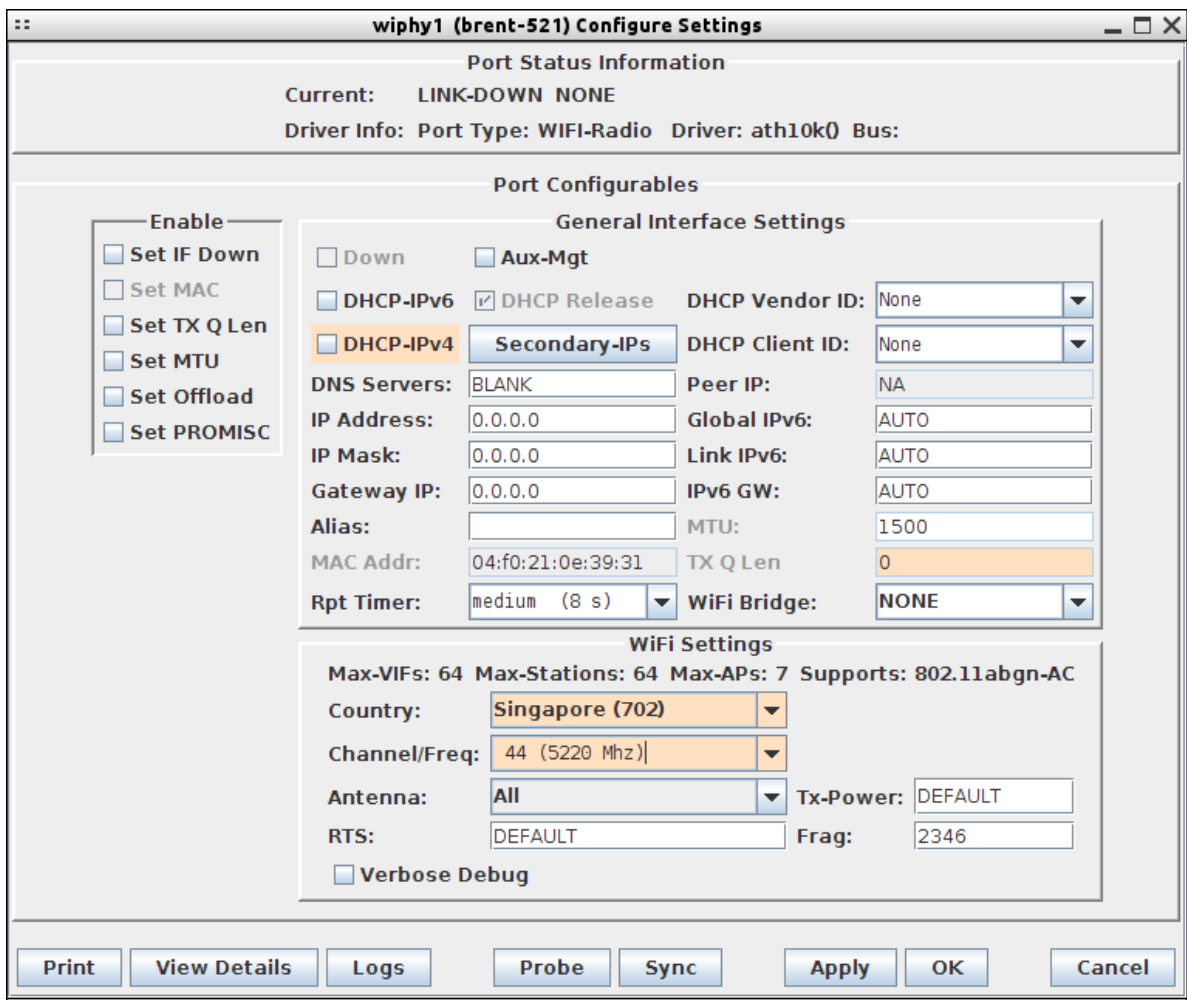
- B. Select port wiphy1 and click Create

C. Select the **Wifi VAP** button, then enter **MAC**, **Quantity**, **STA ID**, and **SSID**. Enter IPv4 address info:



The dialog box is titled "Create VLANs on Port: 1.1.03". It has four numbered steps. Step 1 shows radio button options: MAC-VLAN, 802.1Q-VLAN, Redirect, Bridge, GRE Tunnel, WiFi STA, **WiFi VAP** (selected), WiFi Monitor, and WiFi Virtual Radio. Step 2 shows dropdowns for Shelf (1), Resource (1 (brent-521)), and Port (3 (wiphy1)). Step 3 contains various configuration fields: VLAN ID (empty), DHCP-IPv4 (unchecked), Parent MAC (04:f0:21:0e:39:31), DHCP Client ID (None), MAC Addr (00:bb:bb:bb:bb:01), IP Address (9.9.9.1), Global IPv6 (AUTO), Quantity (1), IP Mask or Bits (255.255.255.0), Link IPv6 (AUTO), Gateway IP (empty), IPv6 GW (AUTO), #1 Redir Name (empty), #2 Redir Name (empty), STA ID (0), SSID (test-195-b), WiFi AP (empty), Key/Phrase (empty), WPA (unchecked), WPA2 (unchecked), and WEP (unchecked). Step 4 has a "Down" checkbox and "Apply" and "Cancel" buttons.

D. Configure the radio's channel (which will apply to the VAP that was just created). Select the wiphy1 interface in the Port-Mgr tab and click **Modify**. Select the channel, and optionally the country-code, and then press **Ok**. If you elect to change the country code, you must do so on all radios in your system in order for proper function.

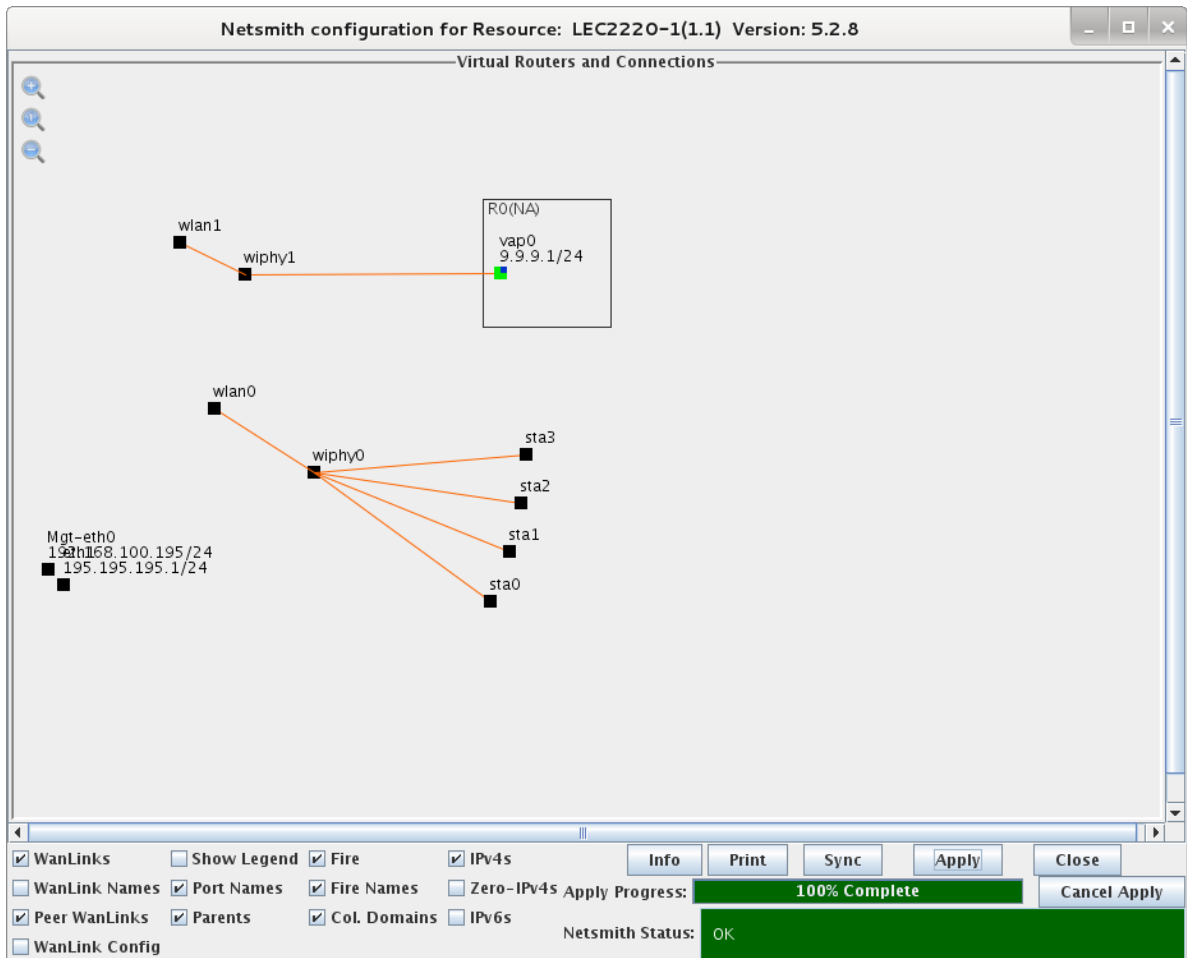


The dialog box is titled "wiphy1 (brent-521) Configure Settings". It has two main sections: "Port Status Information" and "Port Configurables". The "Port Status Information" section shows "Current: LINK-DOWN NONE" and "Driver Info: Port Type: WIFI-Radio Driver: ath10k() Bus:". The "Port Configurables" section has a left sidebar with "Enable" and checkboxes for "Set IF Down", "Set MAC", "Set TX Q Len", "Set MTU", "Set Offload", and "Set PROMISC". The main area is divided into "General Interface Settings" and "WiFi Settings". "General Interface Settings" includes checkboxes for "Down", "Aux-Mgt", "DHCP-IPv6", "DHCP Release" (checked), "DHCP-IPv4", and "Secondary-IPs". It also has fields for "DNS Servers" (BLANK), "IP Address" (0.0.0.0), "IP Mask" (0.0.0.0), "Gateway IP" (0.0.0.0), "Alias" (empty), "MAC Addr" (04:f0:21:0e:39:31), "Rpt Timer" (medium (8 s)), "DHCP Vendor ID" (None), "DHCP Client ID" (None), "Peer IP" (NA), "Global IPv6" (AUTO), "Link IPv6" (AUTO), "IPv6 GW" (AUTO), "MTU" (1500), "TX Q Len" (0), and "WiFi Bridge" (NONE). "WiFi Settings" includes "Max-VIFs: 64", "Max-Stations: 64", "Max-APs: 7", "Supports: 802.11abgn-AC", "Country" (Singapore (702)), "Channel/Freq" (44 (5220 Mhz)), "Antenna" (All), "Tx-Power" (DEFAULT), "RTS" (DEFAULT), "Frag" (2346), and a "Verbose Debug" checkbox. At the bottom are buttons for "Print", "View Details", "Logs", "Probe", "Sync", "Apply", "OK", and "Cancel".

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

2. Use the Netsmith feature to create a virtual router and configure DHCP for the AP.
 - A. Go to the **Status** tab, and click the Netsmith button for Resource 1.

- B. Drag the existing interfaces into a more pleasing layout.
- C. Right-Click in empty space and create a new Virtual Router. Just click OK, using the default configuration.
- D. Drag the VAP interface into the virtual router and click **Apply** at the bottom-right of the Netsmith window..
- E. Double-click the vap0 icon (which should now be green) to bring up the **Create/Modify Connection** window.
- F. Select the DHCP option, and then fill in the **Range Min** and **Range Max** values appropriately.
- G. Apply Netsmith again and the configuration should be done.



3. Use Batch-Modify to configure all of the existing WiFi stations to talk to the new AP.

- A. Go to the **Port-Mgr** tab, select sta0, sta1, sta2, and sta3, and then click the **Batch Modify** button. Configure the SSID to match the AP, and then press OK

LANforge Port Batch Modifier

Search:

Buttons: **Apply** **OK** **Cancel**

Buttons: **Clear DHCP** **Up** **Down** **Down Logout**

Buttons: **Portal Re-login** **Portal Logout** **Portal Login**

1 Up/Down **DHCP Release**

DHCP-IPv4 **DHCP Client ID**

DHCP Vendor ID **MTU**

DNS Servers **IPv6 GW**

Reset Port IP **Global IPv6**

IP Mask **Link IPv6**

Gateway IP **DHCP-IPv6**

MAC **TX Q Len**

Rpt Timer **WiFi Bridge**

FTP **HTTP**

2 SSID **WiFi AP**

Key/Phrase **Mode**

Freq/Chan **Rate**

RTS **Tx-Power**

AMPDU-Factor **AMPDU-Density**

Max-AMSDU **br ip**

WPA **WPA2**

WEP **Disable SGI**

Disable HT40 **Allow Migration**

Scan Hidden

Verbose Debug

Post IF-UP Script

- B. The station interfaces should now get DHCP addresses matching the new AP

LANforge Manager Version(5.2.8)

Control Reporting Tear-Off Info

Buttons: **Stop All** **Restart Manager** **Refresh** **HELP**

Buttons: **Layer-4** **Generic** **Test Mgr** **Test Group** **Resource Mgr** **Serial Spans** **PPP-Links** **Event Log** **Alerts** **Port Mgr** **Messages**

Buttons: **Status** **Layer-3** **L3 Endps** **VoIP/RTP** **VoIP/RTP Endps** **Armageddon** **WanLinks** **Attenuators** **Collision-Domains** **File-IO**

Disp: 192.168.100.226:0.0 **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	Phan...	Down	IP	SEC	Alias	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX	C
1.1.00			192.168.100.195	0	eth0	61,869	501	6	6,829	789,614	688	9	87,163	
1.1.01			195.195.195.1	0	eth1	21,017	130	1	2,320	90	1	0	9	
1.1.02			0.0.0.0	0	wiphy0	84,690	446	6	9,334	12,696	109	1	1,399	
1.1.03			0.0.0.0	0	wiphy1	21,809	150	2	2,403	27,003	142	1	2,975	
1.1.04			0.0.0.0	0	wlan0	0	0	0	0	0	0	0	0	
1.1.05			0.0.0.0	0	wlan1	0	0	0	0	0	0	0	0	
1.1.06			9.9.9.10	0	sta0	8,616	40	0	947	1,654	9	0	181	
1.1.07			9.9.9.13	0	sta1	9,000	42	0	989	2,802	13	0	308	
1.1.08			9.9.9.12	0	sta2	8,958	41	0	984	2,740	12	0	301	
1.1.09			9.9.9.11	0	sta3	8,868	40	0	974	2,850	13	0	313	
1.1.10			9.9.9.1	0	vap0	9,106	47	0	1,001	20,090	75	1	2,208	

Logged in to: 192.168.100.195:4002 as: Admin

4. Create Layer-3 connections between the station interfaces.

- A. Go to the **Layer-3** tab. If there are existing connections, stop and/or delete them, and then click Create. Give the test a name, select sta0 and sta1 for ports, set rate to 100M, and set payload size. When complete, press Apply to create the new CX.

- B. Create a second UDP connection on sta2 and sta3 interfaces. Change name, change ports, and press OK.

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

5. Run traffic tests concurrently, and view results.

- A. Select both CXs in the **Layer-3** tab, and click the **Start** button.

LANforge Manager Version(5.2.8)

Control Reporting Tear-Off Info

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Serial Spans PPP-Links Event Log Alerts Port Mgr Messages

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

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 % A	Rx Drop % B	Drop Pkts A	Drop Pkts B	Avg RTT	Rpt
udp-flood	LF/UDP	Run	121,181	121,731	20,849,257	20,913,330	0	0	0	0	33	
udp-flood...	LF/UDP	Run	121,536	121,171	21,031,401	20,906,182	0	0	0	0	39	

Logged in to: 192.168.100.195:4002 as: Admin

- B. Go to the **Port-Mgr** tab, scroll to the right, and confirm that the Activity for this channel reports a fairly high percentage.

LANforge Manager Version(5.2.8)

Control Reporting Tear-Off Info

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Serial Spans PPP-Links Event Log Alerts Port Mgr Messages

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

Disp: 192.168.100.226:0:0 Sniff Packets Clear Counters Reset Port Delete

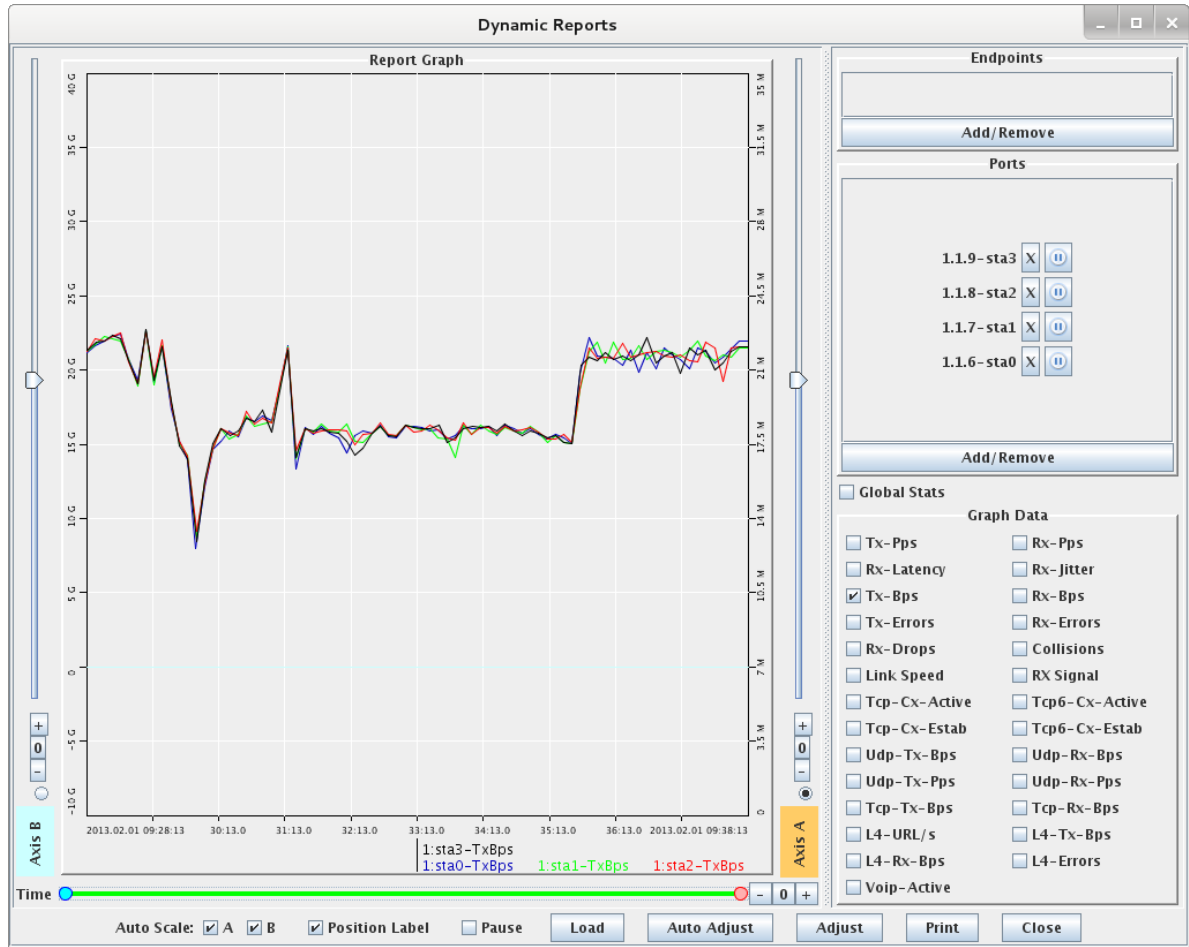
Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

X HB	TX Wind	bps TX LL	Bytes TX LL	bps RX LL	Bytes RX LL	Reset	Rate	Status	Activity	Signal	Noise	Crypt	Retr
0	0	180,745	108,391...	17,751	33,147...	Complete	1 Gbps		0				0
0	0	12	60,616	2,637	20,412...	Complete	1 Gbps		0				0
0	0	86,801...	19,863...	88,595...	20,865...	Complete			84.218				0
0	0	86,627...	7,454,9...	94,061...	7,919,3...	Complete			84.17				0
0	0	0	0	0	0	Complete	0.0 Mbps	NONE	84.221	0 dBm	-95 dBm		0
0	0	0	0	0	0	Complete	0.0 Mbps	NONE	84.17	0 dBm	-95 dBm		0
0	0	21,547...	13,756...	21,519...	2,324,7...	Complete	360.0 M...	Authorized	84.224	-29 dBm	-95 dBm		0
0	0	21,807...	2,358,7...	21,261...	13,568...	Complete	360.0 M...	Authorized	84.224	-29 dBm	-95 dBm		0
0	0	21,687...	1,864,3...	21,328...	1,834,6...	Complete	324.0 M...	Authorized	84.224	-29 dBm	-95 dBm		0
0	0	21,608...	1,859,4...	21,377...	1,839,5...	Complete	270.0 M...	Authorized	84.224	-28 dBm	-95 dBm		0
0	0	86,628...	7,442,2...	85,498...	7,346,4...	Complete	0.0 Mbps		84.169	0 dBm	-95 dBm		0

Logged in to: 192.168.100.195:4002 as: Admin

- C. Select the 4 station ports and Right-Click → Dynamic Report on the **Port-Mgr** table to view a live report of the ports.



For more information see [LANforge User's Guide: Reporting](#)

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