

## Multiple Stations with a Hunt Script

Goal: Do packet sized testing with a hunt script using multiple stations.

We will manipulate the parameters of 10 Layer 3 connections using a single hunt script. The WiFi stations will change packet size as a group by being part of a Test Group. In this scenario, we will create traffic to different upstream destinations using MAC VLANs, and the AP wired up to **eth1** of our LANforge machine. Requires a CT-520 for only stations, or a CT-523 if you also want a WiFi monitor station.





1. Create 10 virtual stations: in the **Port Mgr** tab, highlight radio **wiphy0** and click the *Create* button. In this scenario, we are using SSID *jedtest*.

🛃 Create VLANs on Port: 1.1.2							
<ul> <li>MAC-VLAN</li> <li>802.1Q-VLAN</li> <li>Redirect</li> <li>Bridge</li> <li>Bond</li> <li>GRE Tunnel</li> <li>WiFi STA</li> <li>WiFi VAP</li> <li>WiFi Monitor</li> <li>WiFi Virtual Radio</li> </ul>							
Shelf:	1	Resource:	1 (brent-523) 🔻	Port: 2 (v	viphy0)		
VLAN ID:		DHCP-IPv4					
Parent MAC:	00:0e:8e:4e:59:2f	DHCP Client ID:	None 💌				
MAC Addr:	XX:XX:XX:*:*:XX	IP Address:		Global IPv6:	AUTO		
Quantity:	10	IP Mask or Bits:		Link IPv6:	AUTO		
		Gateway IP:		IPv6 GW:	AUTO		
#1 Redir Name:		#2 Redir Name:					
STA ID:	0	SSID:	jedtest	•	•		
WiFi AP:		Key/Phrase:					
WPA	WPA2	WEP					
Down							
Apply	<u>C</u> ancel		Ri	eady			
	<ul> <li>MAC-VLAN</li> <li>WIFI STA</li> <li>Shelf:</li> <li>VLAN ID:</li> <li>Parent MAC:</li> <li>MAC Addr:</li> <li>Quantity:</li> <li>#1 Redir Name:</li> <li>STA ID:</li> <li>WIFI AP:</li> <li>WIFI AP:</li> <li>WPA</li> <li>Down</li> <li><u>Apply</u></li> </ul>	<ul> <li>MAC-VLAN</li> <li>802.1Q-VLAN</li> <li>Rec</li> <li>WiFi STA</li> <li>WiFi VAP</li> <li>WiFi Monif</li> <li>Shelf:</li> <li>1</li> <li>▼</li> </ul> VLAN ID: Parent MAC: 00:0e:8e:4e:59:2F MAC Addr: pxcx:xx:***:xx Quantity: 10 #1 Redir Name: STA ID: 0 WiFi AP: WPA WPA WPA2 Down <u>Apply <u>Cancel</u></u>	○ MAC-VLAN       ○ 802.1Q-VLAN       ○ Redirect       ○ Bridge         ③ WiFi STA       ○ WiFi VAP       ○ WiFi Monitor       ○ WiFi Virtu         Shelf:       1       ▼       Resource:         VLAN ID:       ✓       ☑ DHCP-IPv4         Parent MAC:       00:0e:8e:4e:59:2F       DHCP Client ID:         MAC Addr:       ▷       ▷         Ducce:**:xx       ✓       IP Address:         Quantity:       10       IP Mask or Bits:         Gateway IP:       #1 Redir Name:       #2 Redir Name:         STA ID:       0       SSID:         WiFi AP:       WPA2       WEP         □ Down	Create VLANs on Port: 1.1.2         MAC-VLAN       \$802.1Q-VLAN       Redirect       Bridge       Bond       GRE Tur         WIFI STA       WIFI VAP       WIFI Monitor       WIFI Virtual Radio         Shelf:       1       ▼       Resource:       1 (brent-523) ▼         VLAN ID:       ✓       DHCP-IPv4         Parent MAC:       00:0e:8e:4e:59:2F       DHCP Client ID:       None         MAC Addr:       ∞cxxcx:*:*xx       ▼       IP Address:       Image: Context in the image: Con	Create VLANs on Port: 1.1.2         MAC-VLAN       802.1Q-VLAN       Redirect       Bridge       Bond       GRE Tunnel         WiFi STA       WiFi VAP       WiFi Monitor       WiFi Virtual Radio         Shelf:       1		

A. Select WiFi STA

- B. Check DHCP-IPv4
- C. Quantity: 10
- D. Station ID: 0
- E. SSID: jedtest
- F. Click **Apply** and then close the window.
- G. You should see stations sta0 sta9.

For more information see creating virtual stations

2. (Simple Method) This method only requires setting the IP on eth1. In this scenario, our upstream network is 10.26.1.0/24. In the Port Mgr tab, highlight eth1 and click Modify.

<b></b>		eth1 (br	ent-523) Config	ure Settings		_ 0 ×		
Cu Dri	Port Status Information Current: LINK-UP 1000bt-FD AUTO-NEGOTIATE Flow-Control TSO GSO GRO Driver Info: Port Type: Ethernet Driver: e1000e(3.2.6-k) Bus: 0000:04:00.0 Cur: 2.5GT/s x1 Max: 2.5GT/s x1							
Enable Set IF Down 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	Down DHCP-IPv6 DHCP-IPv4 DNS Servers: IP Address: IP Mask: Gateway IP: Alias: MAC Addre	General Int General Int Aux-Mgt ✓ DHCP Release Secondary-IPs BLANK 10.26.1.10 255.255.255.0 10.26.1.1 00:90:0b:37:2c:bd	Port Configur Port Configur terface Settings DHCP Vendor ID: DHCP Client ID: Peer IP: Global IPv6: Link IPv6: IPv6 GW: MTU: TX 0 Len	None         ▼           None         ▼           None         ▼           NA         AUTO           AUTO         1500           1000         1000	Port Rates 0 10bt-HD 10bt-FD 0 100bt-FD 0 100bt-FD 0 1000-FD 0 100-FD 0 40G-FD 0 Autonegotiate Renegotiate Restart Xcvr PROMISC RX-ALL	Advert Rates 10bt-HD 10bt-FD 10bt-FD 100bt-FD 1000-FD 10G-FD 40G-FD Flow-Control Offload V TSO Enabled		
Set CPU Mask Services HTTP FTP RADIUS	MAC Addr: Br Cost: Rpt Timer: CPU Mask: Print Vi	o0:90:00:37:2c:bd	Priority: Watchdog: WiFi Bridge: <u>Probe</u> Sync	Ignore v 0 v NONE v	RX-FCS         Bypass NOW!         Bypass Power-UP         Bypass Power-DOWN         Bypass Disconnect	<ul> <li>✓ ISO Enabled</li> <li>✓ UFO Enabled</li> <li>✓ GSO Enabled</li> <li>✓ LRO Enabled</li> <li>✓ GRO Enabled</li> </ul>		

- A. IP: 10.26.1.10
- B. IP Mask: 255.255.255.0
- C. Gateway IP: 10.26.1.1
- D. Click OK.
- 3. (Optional Advanced Method) Create ten MAC VLANs on the eth1. In this scenario, our upstream network is 10.26.1.0/24. In the Port Mgr tab, highlight eth1 and click Create.

\$	Create VLANs on Port: 1.1.01							
1	MAC-VLAN							
2	Shelf:	1	Resource:	1 (brent-523) 🔻	Port: 1 (e	eth1) 💌		
a	VLAN ID:		DHCP-IPv4					
e	Parent MAC:	00:90:0b:37:2c:bd	DHCP Client ID:	None 💌				
	MAC Addr:	XXX:XXX:XXX:*:*:XXX	IP Address:	10.26.1.11	Global IPv6:	AUTO		
	Quantity:	10	IP Mask or Bits:	255.255.255.0	Link IPv6:	AUTO		
			Gateway IP:	10.26.1.1	IPv6 GW:	AUTO		
	#1 Redir Name:		#2 Redir Name:					
	STA ID:		SSID:		-	r		
	WiFi AP:		Key/Phrase:					
	WPA	WPA2	WEP					
4	Down							
	<u>A</u> pply	<u>C</u> ancel		R	eady			
A	. Select MAC-	VLAN						
В	. Quantity: 10							

- C. IP: 10.26.1.11
- D. IP Mask: 255.255.255.0
- E. Gateway: 10.26.1.1
- F. Click **Apply** and close the window.
- G. You should see 10 MAC VLANs, eth1#0 eth1#9.
- 4. Create ten Layer-3 cross connects. We will start at 10Mbps transmit on them as a reasonable start. In general hunt scripts start low and try to work their way higher. When using more stations, set a lower starting transmit rate. In the Layer-3 tab, click *Create*.

📓 sta-mac-0 - Create/Modify Cross Connect 📃							
+ - All	Display	Syr	Batch-Create	Apply OK Cancel			
CX Name: CX Type:	Cross-Connect sta-mac-0 LANforge / UDP			•			
	Endpoint A		Endpoint B				
Resource:	1 (brent-523)	•	1 (brent - 523)	<b>•</b>			
Port:	1 (eth1)	•	4 (sta0)	•			
Min Tx Rate:	10M (10 Mbps)	-	10M (10 Mbps)	•			
Max Tx Rate:	Same	-	Same	•			
Min PDU Size:	Αυτο	-	Αυτο	•			
Max PDU Size:	Same	-	Same	•			
IP ToS:	Best Effort (0)	-	Best Effort (0)	▼			
Pkts To Send:	Infinite	-	Infinite	•			
1							

- A. Name: sta-mac-0
- B. Endpoint-A: eth1 (if using the advanced MAC-VLAN method, set this to eth1#0.

- C. Endpoint-B: sta0
- D. Type: LANforge / UDP
- E. Min Tx Rate: 10Mbps (both sides)
- F. Click **Apply**. Leave the window open.
- 5. Create nine more stations. Click **Batch-Create**.

4	Layer-3 Batch Creator: sta-mac-0						
sta-mac-1, sta-mac-2	sta-mac-9						
Endp-A Resources: 1,	1 1						
Endp-B Resources: 1,	1 1						
Endp-A Ports: et	hl, ethl et	hl					
Endp-B Ports: st	al, sta2 sta	19					
Endp-A IPs: AI	JTO, AUTO A	UTO					
Endp-B IPs: A	JTO, AUTO A	UTO					
Quantity:	9	Number of Digits:	4	Zero Pad			
Starting Name Suffix:	0	Name Increment:	1				
Resource Increment A:	0	Resource Increment B:	0				
Port Increment A:	0	Port Increment B:	1				
IP Addr Increment A:	0	IP Addr Increment B:	0				
IP-Port Increment A:	1	IP-Port Increment B:	1				
	App	y <u>C</u> lose					

- A. Quantity: 9
- B. Deselect Zero Pad.
- C. If only eth1 is used for upstream traffic, set Port Increment A to 0. Otherwise leave it at 1.
- D. Click **Apply** and close window.
- E. Close the Create/Modify Cross Connect window.
- 6. You will see ten Layer-3 connections in the Layer-3 tab.

4				LANforge M	Manager Versi	on(5.3.6)				_ O X
<u>Control</u> <u>R</u> epo	Control Reporting Tear-Off Info Plugins									
					Stop A	II Restar	Manager		Refresh	HELP
Laver-4 Ge		est Mar	Test Group	Resource Mar	Evention	lerts Port Mar		Message	e	
Status	Laver-3	L3 End		RTP V	DIP/RTP Endos		WanLink	s Atte	anuators	File-IO
	20,010	20 211								
Rpt	Timer: d	efault (5	s) 🔻 Go	Test Manage	r all 💌	Select All	Start <u>S</u> to	op <u>Q</u> uieso	ce Clear	
Vie	w 0	- 500		🔻 Go		Display	Cr <u>e</u> ate	Mo <u>d</u> ify	Delete	
					- nacts for Salacta	d Test Manager-				
			1	cross con	inects for Selecte	u rest Manager				
Name	Туре	State	Pkt Rx A	Pkt Rx B	Bps Rx A	Bps Rx B	Rx Drop % A	Rx Drop % B	Drop Pkts A	Drop Pkts
sta-mac-0	LE/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-1	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-2	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-3	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-4	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-5	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-6	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-7	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-8	LF/UDP	Stopped	0	0	0	0	0	0	0	
sta-mac-9	LF/UDP	Stopped	0	0	0	0	0	0	0	
•										•
Logged in to:	brent-52	3:4002 as:	Admin							

7. Create a Test Group. In the Test Group tab, click Create.

🖆 Cre	ate/Modify Test Group	
Test Group Name:	sta-mac Script	🖌 Config As Totals
1	Cross Connects (CX)	1
Registered CXs		Free CXs
sta-mac-0 sta-mac-1 sta-mac-2 sta-mac-3 sta-mac-4 sta-mac-5 sta-mac-6 sta-mac-7 sta-mac-8 sta-mac-9	← Add Cx Free Cx →	
A	oply OK Cance	el

- A. Name: sta-mac
- B. Select Config As Totals.
- C. Highlight all the **sta-mac-x** connections and click **← Add Cx**.
- D. Click Apply.
- E. Click Script.

F. Configure the Test Group Script.

<b>\$</b>	Add/Mod	ify Script	
Group Name: sta-mac	Script Type:	ScriptHunt 🗸	
Script Name: start-10Mbps	Group Action:	All	
🗷 Enable Script 🖉 Show	Reports 📃 Symmetric 📃 l	.oop 📃 Hide Iteration Detail	s 📃 Hide Legend 📃 Hide CSV
Loop Count Forever	<ul> <li>Script Iterations</li> </ul>	: 180 (180)	Estimated Duration: 18 m (18 m)
	Script (	Configuration	1
🗹 Use TCP MSS 🛛 Sho	w Dups 📃 Show 000 🕑	Show Attenuation	
Hide Latency Distributi	ons 🗌 Hide Hunt Steps 🛛	Hide Constraints	
Run Duration:	5s (5s)	<ul> <li>Pause Duration:</li> </ul>	ls (ls) 🔻
Starting Rate:	10M (10 Mbps)	Max Iterations:	20 💌
Max Drop Percent:	5% (5%)	▼ Max-Tx-Underrun:	10% (10%)
Max Jitter:	high (100 ms)	<ul> <li>Max RT Latency:</li> </ul>	500ms (500 ms) 💌
Threshold:	3% (30,000)	-	
Payload Sizes / 60 128 256 512 1024 1280 1460 1472 1514 Show Previo	A Paylo 60 128 256 512 1024 1280 1460 1472 1514 Sync	Apply	Attenuations (ddB)
Snow Previo	Sync Sync	Арріу	Cancel
A. Group Name: sta-mac			

- B. Script Type: ScriptHunt
- C. Script Name: start-10Mbps
- D. Starting Rate: 10M
- E. Click **OK**.
- G. Close the Create Test Group window.
- 8. Start the test. Highlight the test group and click **Start**.

🛃 LANforge Manager Version(5.3.6) 🗕 🗆	×
Control Reporting Tear-Off Info Plugins	
Stop All Restart Manager Refresh HELF	P
Layer-4         Generic         Test Group         Resource Mgr         Event Log         Alerts         Port Mgr         VAP Stations         Messages           Status         Layer-3         L3 Endps         VolP/RTP         VolP/RTP Endps         Armageddon         WanLinks         Attenuators         File-IO	
Rpt Timer:   default (5 s)   Image: Go     Select All   Start   Stop   Quiesce   Clear     Display   Create   Modify   Delete	
LANforge Test Groups	_
Name Run Script Cross Connects	
sta-mac 📋 Enabled  sta-mac-0 sta-mac-1 sta-mac-2 sta-mac-3 sta-mac-4 sta-mac-5 sta-mac-6 sta-mac-7 sta-mac-8 sta-mac-9	
Logged in to: brent-523:4002 as: Admin	

9. You will see the script report window.

Script Report for: sta-mac Completed at: Tue Mar 28 16:14:45 PDT 2017	_0	×
<pre># iteration: 0/180 Endpoint: sta-mac now: 1490742330645ms duration: 5002ms paused: 0ms # payload-size: 60 cfg-rate: 10000000 # tx.pkts: 104138 tx.bytes: 6248280 tx.bytes-low-level: 10622076 tx.pps: 20819 # tx.pkts: 9993251 tx.bps-low-level: 16988526 # rx.pkts: 42457 rx.bytes: 62496704 rx.bytes-low-level: 64279898 # rx.pkts: 42457 rx.bytes: 62496704 rx.bytes-low-level: 102806714 # rx.drops: 0 rx.dups: 0 rx.ooo: 0 machine-load: 0.00 # peer: rx.pkts: 79744 rx.bytes: 4784640 rx.pps: 15942 # rx.spts: 7652363 rx.bps-low-level: 13009017 # dropped: 24394 drop percent: 23.4247 avg-rx.latency(us): 68 avg-rt-latency(us): 75000 peer-machine-load: 0.00 # rx.signal: -35 tx-link-speed: 450000000 rx.link-speed: 450000000 attenuation: 100 peer-rx.signal: -35 tx-peer-link-speed: 450000000 # peer-dropped: 27 peer drop percent: 0.0636 # * Failed drop-percent constraint, reported: 23.4247% max: 5</pre>		
<pre># iteration: 1/180 Endpoint: sta-mac now: 1490742336689ms duration: 5042ms paused: 1002ms # payload-size: 60 cfg-rate: 5000000 # tx-pkts: 52016 tx-bytes: 3120960 tx-bytes-low-level: 5305632 tx-pps: 10317 # tx-pkts: 42390 rx-bytes: 62398080 rx-bytes-low-level: 64178460 # rx-phts: 42390 rx-bytes: 62398080 rx-bytes-low-level: 64178460 # rx-pps: 8407 rx-bps: 99005284 rx-bytes-low-level: 101830163 # rx-drops: 0 rx-dups: 0 rx-oo: 0 machine-load: 0.07 # peer: rx-pkts: 51928 rx-bytes: 3115680 rx-pps: 10299 # rx-bytes: 51928 rx-bytes: 3115680 rx-pps: 10299 # rx-signal: -34 tx-link-speed: 45000000 rx-link-speed: 405000000 attenuation: 100 peer-machine-load: 0.07 # peer-link-speed: 450000000 # rx-signal: -34 tx-link-speed: 45000000 rx-link-speed: 405000000 attenuation: 100 peer-rx-signal: -34 tx-peer-link-speed: 405000000 # * Peer-dropped: 41 peer drop percent: 0.0966 # * Passed constraints *</pre>		
<pre># iteration: 2/180 Endpoint: sta-mac now: 1490742342693ms duration: 5002ms paused: 1002ms # payload-size: 60 cfg-rate: 7500000 # tx-pkts: 78098 tx-bytes: 4685880 tx-bytes-low-level: 7965996 tx-pps: 15613 # tx-bps: 7494410 tx-bps-low-level: 12740497 # rx-pkts: 42457 rx-bytes: 62496704 rx-bytes-low-level: 64279898 # rx-pps: 8488 rx-bps: 99954745 rx-bps-low-level: 102806714 # rx-drops: 0 rx-dups: 0 rx-oo0: 0 machine-load: 0.07 # peer: rx-phts: 77825 rx-bytes: 4669500 rx-pps: 15559 # rx-bps: 7468213 rx-bps-low-level: 12695962 Pause Close Save File Graphical Display Invert RX-Signal X Axis</pre>		•

10. When the test is finished, click **Graphical Report** to see graphs.



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