

Introduction to Layer 4-7 Traffic Generation

Goal: Use LANforge to emulate layer 4-7 download traffic

Creating web browsing and movie watching emulation is a common task with LANforge. This cookbook will introduce HTTP download examples and describe the difference between the Layer 4-7 and Generic traffic generation techniques. We will begin on a CT520a with 20 stations. There are two methods of emulating web browsing:

- 1. Layer 4-7 connections: these are workers doing downloads using cur1
- 2. **Generic connections**: these are scripts called programs that can download or upload. Not just any program can be used, these programs need to be able to bind to a specified network interface.

If you want to:

...load test a web server, you will use mostly use Layer 4-7 connections.

...**Dultiple video streams**, you would use **Generic** connections that call **c-clive** ...**Upload files**, you would use **Generic** connections that call **curl** The following examples do not assume your LANforge has a route to the Internet, but are pointing at a webserver IP address. We are going to show making a







Simple HTTP Get

2. Check your Port Mgr tab and note we have 20 stations on resource 2, radio wiphy0.

	▲ LANforge Manager Version(5.3.9) – □ × Control Reporting Tear-Off Info Plugins																	
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Test M	Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations DUT Profiles Traffic-Profiles Messages																	
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oracao	Lajoro	20				Enapo	ranagot		Trancin							Lajor i	00110	110
	Disp: 192	.168.10	0.39:0.0	S	niff Packet	s	Dowr	n 1	Clear	Counte	ers	Res	set Port	Delete				
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	All Ethernet Interfaces (Ports) for all Resources.																	
	All Ethernet Interfaces (Ports) for all Resources.																	
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1.2.03 wiphy0 157 sta1000 jedway1-vap1000 10.136.0.70 04:F0:21:A8:92:AB 802.11an-AC -30 dBm -103 c																		
1.2.05			wiphy0	157	sta1001	je	dway1-vap	1000 1	10.136.0.8	39		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	c
1.2.06			wiphy	157	sta1002	je	dway1-vap	1000 1	10.136.0.7	2		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	£
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1.2.08			wiphy0	157	sta1004	je	dway1-vap	1000 1	10.136.0.7	'3		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	9
1.2.09			wiphy0	157	sta1005	je	dway1-vap	1000 1	10.136.0.7	75		04:F0:	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	d=
1.2.10			wiphy0	157	sta1006	je	dway1-vap	1000 1	10.136.0.7	6		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	¢
1.2.11			wiphy0	157	sta1007	je	dway1-vap	1000 1	10.136.0.8	30		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	q
1.2.12		<u> </u>	wiphy0	157	sta1008	Je	dway1-vap	1000 1	10.136.0.7	8		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	<u>c</u>
1.2.13			wipnyu	157	sta1009	Je	dway1-vap	1000 1	10.136.0.7	4		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	
1.2.14		<u> </u>	wipnyo	157	sta1010	Je	dway1-vap	1000 1	10.136.0.7	7		04:F0:2	21:A8:92:AB	802.11ar	1-AC	-20 dBm	-103	9
1.2.15			wiphy0	157	statut1	Je	dway1-vap	1000 1	10.130.0.8	18		04.F0.4	21.A8.92.AB	802.11ar	I-AC	-20 dBm	-103	
1.2.10			wiphy0	157	sta1012	je	dway1-vap	1000 1	10.130.0.0	70		04.F0.4	21.A0.92.AD	002.11ar	I-AC	-20 dBm	103	
1.2.17			wiphy0	157	sta1013	je	dway1-vap	1000 1	10.130.0.7	9		04.F0.2	21.A0.92.AD	002.11a	I-AC	-20 dBm	103	
1.2.10			wiphy0	157	eta1014	je	dwav1-vap	1000 1	10.136.0.9	N N		04.F0.2	21.A0.92.AD	802.11a	I-AC	-20 dBm	-103	
1 2 20			wiphy0	157	eta1015	ic	dwav1-vap	1000 1	10 136 0 9	27		04:F0:	21.A0.92.AD	802 11ar	-40	-20 dBm	-103	1
1221			wiphy0	157	sta1017	je	dwav1-vap	1000 1	10 136 0 8	2		04:E0:	21:A8:92:AB	802 11ar	I-AC	-20 dBm	-103	
12.21			wiphy0	157	sta1018	ie	dwav1-vap	1000 1	10 136 0 8	16		04:F0:	21:A8:92:AB	802 11ar	I-AC	-20 dBm	-103	
1223			wiphy0	157	sta1019	je	dwav1-vap	1000 1	10 136 0 8	3		04:F0:	21:A8:92:AB	802 11ar	I-AC	-20 dBm	-103	1
1224			wiphy1	64	sta2100	ie	dwav1-vap	1100 1	10.136.0.9	12	-	04:E0:	21:38:03:B7	802 11ar	I-AC	-21 dBm	-103	
12.26	.2.24 wiphy1 64 sta2100 jedway1-vap110010.136.0.92 04:F0:21:38:03:B7 802.11an-AC -21 dBm -103 d																	
4	1.2.26 wiphy1 64 sta2101 jedway1-vap1100 10.136.0.90 04:F0:21:38:03:B7 802.11an-AC -21 dBm -103 d																	
																		-
Logged	in to: jedw	ay1:400	02 as: Admii	n														

3. Move to the Layer 4-7 tab

🛃 LANforge Manager	Version(5.3.9)							- 0	×
<u>Control</u> <u>Reporting</u>	ear-Off <u>I</u> nfo <u>P</u> lugins								
	Cha	mber View		Stop All	Restart	Manager	R	efresh	HELP
Generic Test Mgr Status Layer-3	Test Group Resource L3 Endps VolP/RTP	e Mgr Event Log VoIP/RTP End	g Alerts ps Arma	Port Mgr geddon W	vAP Stations /anLinks At	DUT Profi tenuators I	les Traffic-Pr RF-Generator	ofiles Mes File <mark>-IO</mark>	Layer-4
Rpt Timer:	st (1 s) 🔻 G	Test Manager	all	-	Select All	Start + <u>S</u> to	p - <u>Q</u> uiesce	Clear	
View 0	- 500	🔻 Go		[Disp <u>l</u> ay Cr <u>e</u>	ate Mo <u>d</u> ify	Batch Modify	Delete	
		Layer-4 E	Endpoints for	Selected Test	t Manager ——				
Name EID	Type Status	Total-URLs	URLs/s	Bytes-RD	Bytes-WR	Tx Rate	Tx Rate (1 min)	Rx Rate	Rx Rate (1 min)
					Ν				
					- 45				Þ
Logged in to: jedway1	:4002 as: Admin								

4. Create a new connection, this example is named www1. on resource 2, WiFi station sta1000 Next, consider the URLs per 10 minute field.

🕌 Create/Modify L4	4Endpoint					_		×
Name:	www1	Rpt Timer:	fast (1 s)	•	Test Manager:	default_tm		-
Shelf: 1	Resource: 2 (jedway2)	▼ Port: 3 (s	sta1000)	-	IP Addr:	AUTO		-
Endp Name:	0	URLs per 10m:	100		Max Speed:	Infinite		-
Quiesce:	3 (3 sec) 💌	URL Timeout:	10000	How	many URLs should try	to process per	10 minut	ies: 🚽
TFTP Block Size:	Default (512 B)				 600: 1/s 1200: 2/s 			
Proxy Port:					 1800: 3/s 2400: 4/s 			
Proxy Auth:					• 3000: 5/s			
Proxy Auth Types:	🔲 Basic 🔲 Digest 🔲 NTLM							
HTTP Compression:	🔲 Gzip 🔲 Deflate							
HTTP Auth Types:	🔲 Basic 🔲 Digest 🔲 GSS-I	Negotiate 🔲 NTI	LM					

A. Hover your mouse over the URLs per 10 min field to see the tool tip. If you wanted to create five connections per second, that would be **3000** connections in 10 minutes. This differs from the Max Speed field, which sets the maximum bit per second for the connection.

5. Continue with other settings. We are purposely going to make an error and diagnose it.

🗟 Create/Modify L4Endpoint – 🗆 X												
Name:	www1	Rpt Timer:	fast (1 s)	-	Test Manager:	default_tm		-				
Shelf: 1 🔽 F	Resource: 2 (jedway2)	▼ Port: 3 (s	ta1000)	-	IP Addr:	AUTO		-				
Endp Name:	0	URLs per 10m:	3000		Max Speed:	Infinite		•				
Quiesce:	3 (3 sec) 💌	URL Timeout:	1000	-	DNS Cache Timeout:	600		-				
TFTP Block Size:	Default (512 B) 💌											
Proxy Port:		Proxy Server:										
Proxy Auth:												
Proxy Auth Types:	Basic Digest NTLM											
HTTP Compression:	Gzip Deflate											
HTTP Auth Types:	🗌 Basic 🔲 Digest 🔲 GSS-N	Jegotiate 🔲 NTL	.M									
SSL Cert:	ca-bundle.crt											
SMTP-From:												
Agent/RCPT-TO:												
UL/DL:	Download 🗸	✓ IPv4	IPv6									
URL:	http://ctweb.candelatech.com/											
Source/Dest File:	/dev/null											
Get-URLs-From-F	ile 🗌 Authenticate Server [Use-Proxy	Allow-Reuse	Allo	ow-Cache 🛛 Enable	4XX 🗌 Sho	w Header	rs				
Bind DNS	TP PASV FTP EPSV	N		_								
	Apply	<u>o</u> k v	Batch-Create		Cancel							

- A. Set the request rate, choose the number of URLs per 10 min to 3000
- B. DNS Cache Timeout: 600
- C. Select Gzip
- D. Set URL to http://10.136.0.1/
- E. Set Destination file or directory to /dev/null if you are on Linux. (If you are on Windows, you need to use NUL)
- F. Select Enable 4XX to show errors in logs
- G. Select Bind DNS so that hostnames are resolved over sta1000 (not over our management port)

- H. Click **Apply**. Do not close this window.
- 6. Back in the Layer 4-7 tab, select the connection

🛓 LANforg	e Manager	Version(5.3.9))									×
Control Re	porting <u>T</u> ea	ar-Off Info	Plugins									
			Char	mber View		Stop All	Restart M	anager	Re	fresh		HELP
Generic Status I	Test Mgr _ayer-3 l	Test Group L3 Endps	Resource VoIP/RTP	Mgr Event Lo	g Alerts Ips Armag	Port Mgr W	AP Stations	DUT Profil enuators F	es Traffic-Pro	files File-IO	Mess	ages ayer-4
Rpt Viev	Timer: fas v 0-5	t (1s)) v Go	Test Manager	all		Select All S Disp <u>l</u> ay Cr <u>e</u> a	Start + <u>S</u> top te Mo <u>d</u> ify	<u>Q</u> uiesce <u>B</u> atch Modify	Clear	ete	$\left[\right]$
		-	-2	Layer-4 I	Endpoints for	Selected Test	Manager					
Name	EID	Туре	Status	Total-URLs	URLs/s	Bytes-RD	Bytes-WR	Tx Rate	Tx Rate (1 min)	Rx Ra	te	Rx Rate (1 min)
www1	1.2.3.161	L4/Gen	Stopped	0	0	0	0	0	0		0	
												•
Logged in to): jedway1:4	002 as: Ad	min									

7. Start the connection

🛃 LANforg	e Manager	Version(5.3.9	9)								i ×
<u>Control</u> <u>R</u> e	porting <u>T</u> ea	ar-Off <u>I</u> nfo	<u>P</u> lugins								
			Chai	mber View		Stop All	Restart M	lanager	R	efresh	HELP
Generic Status I	Test Mgr _ayer-3 L	Test Group .3 Endps	Resource VolP/RTP	Mgr Event Lo VoIP/RTP End	og Alerts dps Arma	Port Mgr v geddon W	AP Stations anLinks Atte	DUT Profi enuators I	les Traffic-Pr RF-Generator	ofiles Me File-IO	ssages Layer-4
Rpt Viev	Timer: fas	t (1 s) 🔻 Go	Test Manager	all		Select All	Start + <u>S</u> to ate Mo <u>d</u> ify	p - Quiesce	Clear Delete	
	and the second			Laver-4	Endpoints for	Selected Test	Manager				
Name	EID	Туре	Status	Total-URLs	URLs/s	Bytes-RD	Bytes-WR	Tx Rate	Tx Rate (1 min)	Rx Rate	Rx Rate (1 min)
www1	1.2.3.161	L4/Gen	Run	0	0	0	0	(0 0		0
				43							
											Þ
Logged in to): jedway1:4	002 as: Ad	Imin								

A. ... then click **Display**

8. Watch the www1 endpoint window...

🕌 Layer-4 Endpoint www1 Manager	: jedway1		– 🗆 X
	Endpoint: www1		
Port Resource: jedway2 Port: sta1000 IP: 10.136.0.70	Endpoint EID: 1.2.3.161 Cfg URLs/10m: 3000 RX Rate: 0 bps	0:0 First RX 0:0 0:0 Avg:0 0:0 0:0 00 0:0 0:0 00 0:0 0:0 0:0 0:0 0:0 0:0 0:0	URL Completed Avg:0 00
bps TX: 33 bps Pps Tx: 0 pps bps PY: 137 bps	TX Rate: 0 bps URLs/s: 0		2^20
Pps RX: 0 pps Errors: 0	Total-ERR: 0 Type: L4/Gen	-2^15 -1024 -32	-2^15 -1024 -32
65.538 Kps 256 ps 0 ps 17.18 Gaps 33.554 Maps 131.072 Kaps 258 bps 0 bps 17.18 Gaps 33.554 Maps 17.18 Gaps 33.554 Maps 131.072 Kaps 256 bps 0 bps URLs Processed Tx Throughput	t Rx Throughput	200 000 000 000 000 000 000 000	
Pause Display	nt Stop Refresh	Modify Clea	Close

A. Notice how there is no traffic to **ctweb**: because the hostname will not resolve over our test network. This is a common mistake. Let's use the IP of our other LANforge hosting our test network instead.

9. Change the URL to use an IP address: http://10.136.0.1/

📓 Create/Modify L4	Endpoint					- 0	×
Name:	www1	Rpt Timer:	fast (1 s)	-	Test Manager:	default_tm	-
Shelf: 1	Resource: 2 (jedway2)	▼ Port: 3 (s	ta1000)	-	IP Addr:	AUTO	-
Endp Name:	161	URLs per 10m:	3000		Max Speed:	Infinite	-
Quiesce:	3 (3 sec) 💌	URL Timeout:	1000	-	DNS Cache Timeout:	600 (10 min)	-
TFTP Block Size:	Default (512 B)						
Proxy Port:		Proxy Server:					
Proxy Auth:							
Proxy Auth Types:	🔲 Basic 🔲 Digest 🔲 NTLM						
HTTP Compression:	🗹 Gzip 🔲 Deflate						
HTTP Auth Types:	🔲 Basic 🔲 Digest 🔲 GSS-N	Negotiate 🔲 NTL	.M				
SSL Cert:	ca-bundle.crt						
SMTP-From:							
Agent/RCPT-TO:							
UL/DL:	Download -	✓ IPv4	IPv6				
URL:	http://10.136.0.1/						
Source/Dest File:	Adev/null						
Get-URLs-From-F	File 🔲 Authenticate Server 🛛	Use-Proxy [Allow-Reuse] Allo	ow-Cache 🗹 Enable	4XX 🗌 Show Heade	ers
Bind DNS	TP PASV I FTP EPSV						
	Apply	<u>0</u> K	Batch-Create		Cancel		

A. Click Apply

- B. Do not close the window.
- 10. The endpoint display now shows traffic.

			Endpoint: www	v1			
Resource: Port: IP: bps TX: Pps Tx:	Port jedway2 sta1000 10.136.0.70 32.598 Kbps 43 pps	End EID: Cfg URLs/10m: RX Rate: TX Rate: URI s/s:	dpoint 1.2.3.161 3000 224.88 Kbps 0 bps 3.65	217: 227 218: 199 228: 19 248: 18 248: 12 248: 12 248: 12 249: 1 344: 0 472: 0 728: 0 1240: 0 2284: 0	First RX Avg:218 216359	219: 93 220: 140 222: 225 226: 60 234: 13 260: 11 262: 12 346: 1 474: 1 730: 1 1242: 0 2266: 0	URL Compl Avg:222 218433
bps RX: Pps RX: Errors: 65.538 Kps 256 ps 0 ps 17.18 Gaps 31.554 Mbps 258 bps 258 bps 0 bps 17.18 Gaps 17.18 Gaps 17.18 Gaps	248.032 Kbps 36 pps 0	URLs Processed: Total-ERR: Type:	: 557 0 L4/Gen	1:558 2:0 4:0 8:0 16:0 32:0 64:0 128:0 256:0 1024:0 2048:0	2^20 -2^15 -1024 -32 0 DNS Comple Avg:0 00	ted	2^20 -2^15 -1024 -32 0
33.554 Mbps - 31.072 Kbps - 256 bps - 0 bps JRLs Proce	ssed Tx Throughp	ut Rx Throughput			2^20 -2^15 -1024 -32 0		

A. Not having DNS resolution is a common problem in test networks.

- B. It can cause problems when connecting to a https website and getting certificate errors.
- C. Click Close
- 11. It is pretty simple to create a connection per WiFi station on our LANforge. Return to our **Create/Modify**L4Endpoint window for www1

🛃 Create/Modify L4	Endpoint					-		×
Name:	www1	Rpt Timer:	fast (1 s)	-	Test Manager:	default_tm		
Shelf: 1	Resource: 2 (jedway2)	Port: 3 (s	sta1000)	-	IP Addr:	AUTO		-
Endp Name:	161	URLs per 10m:	3000		Max Speed:	Infinite		-
Quiesce:	3 (3 sec) 💌	URL Timeout:	1000	-	DNS Cache Timeout:	600 (10 min)		-
TFTP Block Size:	Default (512 B)							
Proxy Port:		Proxy Server:						
Proxy Auth:								
Proxy Auth Types:	🔲 Basic 🔲 Digest 🔲 NTLM							
HTTP Compression:	Gzip Deflate							
HTTP Auth Types:	🔲 Basic 🔲 Digest 🔲 GSS-1	Negotiate 🔲 NTL	_M					
SSL Cert:	ca-bundle.crt							
SMTP-From:								
Agent/RCPT-TO:								
UL/DL:	Download 🗸	₽V4	IPv6					
URL:	http://10.136.0.1/							
Source/Dest File:	/dev/null							
Get-URLs-From-F	File 🔲 Authenticate Server	Use-Proxy [Allow-Reuse	All	ow-Cache 🗹 Enable	4XX 🗌 Shov	v Headei	rs
Bind DNS	TP PASV V FTP EPSV	1						
	Apply	<u>o</u> k	Batch-Create]	Cancel			

- A. Click Batch-Create
- 12. In the Batch Create window, create 19 more connections

🕌 Layer-4 Batch Creat	or: www1		_		×
www002, www003 w Resources: 2, 2 2 Ports: sta1001, IPs: AUTO, AU	www020 sta1002 sta1 JTO AUTO	1019			
Quantity: Starting Name Suffix:	19 1	Number of Digits: Name Increment:	<mark>3</mark> 1	Zero	o Pad
Resource Increment A: Port Increment A:	0]]			
IP Addr Increment A:	0	Cat LIBL & Fram File			
IP Addr Increment A: File Increment:	о ој 	Get-URLs-From-File			

- A. Quantity: 19
- B. Number of Digits **3**
- C. File Increment: **0** (because we don't have multiple /dev/null files)
- D. Click Apply

Chamber View Stop All Restart Manager Refresh HELF Test Group Resource Mgr Event Log Alerts Port Mgr vAP Statuons DUT Profiles Traffic-Profiles Messages Status Layer-3 L3 Endps VolP/RTP VolP/RTP Endps Armageddon WanLinks Attenuators RF-Generator File-IO Layer-4 Generic View 0 - 500 Go Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate Tx Rate Rx Rate (1 min) www002 1.25.162 L4/Gen Stopped 0	LANforg	e Manager	Version(5.3.9)) Plugins							_		
Test May Test Group Resource May Event Log Alerts Port May vAP Stations DUT Profiles Traffic-Profiles Messages Status Layer-3 L3 Endps VoIP/RTP Endps Armageddon WanLinks Attenuators RF-Generator File-IO Layer-4 Generic Rpt Timer: fast (1 s) Go Test Manager all ✓ Select All Status Total-URLs User-4 Generic View 0-500 ✓ Go Display Crgate Modify Batch Modify Delete Layer-4 EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate Tx Rate (1 min) Rx Rate www002 1.2.5.162 L4/Gen Stopped 0		porting <u>r</u> ee	n on into	Lidgino	Chamber View	/	Stop All	Re	start Manager		Refresh	HELP	
Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations DUT Profiles Traffic-Profiles Messages Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Armageddon WanLinks Attenuators RF-Generator File-IO Layer-4 Generic View 0 - 500 Imageddon VanLinks Attenuators RF-Generator File-IO Layer-4 Generic Layer-4 Endpoints for Selected Test Manager Mame EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate Tx Rate Tx Rate (1 min) www0001 1.2.5.163 L4/Gen Stopped 0 0 0 0 0 0 www0001 1.2.7.164 L4/Gen Stopped 0 0 0 0 0 0 0 0 www0001 1.2.1.167 L4/Gen Stopped 0 0 0 0 0 0 0 0 0 0 0 0 0 <				L									
Status Layer-3 L3 Endps VolP/RTP VolP/RTP Endps Armageddon WanLinks Attenuators RF-Generator File-IO Layer-4 Generic View 0-500 Go Display Create Modify Batch Modify Delete Layer-4 Endpoints for Selected Test Manager Name EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate (1 min) Rx Ra	Test Mgr	Test Group	Resource	ce Mgr Eve	nt Log Alerts	Port Mgr	vAP Stations	DUT Pro	files Traffic	-Profiles Me	ssages		
Rpt Timer: fast (1 s) Co Test Manager all Colspan="2">Select All Start + Stop - Quiesce Clear View 0 - 500 Co Display Create Modify Batch Modify Delete Layer-4 Endpoints for Selected Test Manager Xeww002 12.5.162 L4/Gen Stopped O <th colsp<="" td=""><td>Status I</td><td>ayer-3 L3</td><td>B Endps</td><td>VoIP/RTP</td><td>VoIP/RTP Endp</td><td>s Armage</td><td>ddon WanL</td><td>inks Attenua</td><td>ators RF-G</td><td>enerator Fil</td><td>e-IO Layer-</td><td>4 Generic</td></th>	<td>Status I</td> <td>ayer-3 L3</td> <td>B Endps</td> <td>VoIP/RTP</td> <td>VoIP/RTP Endp</td> <td>s Armage</td> <td>ddon WanL</td> <td>inks Attenua</td> <td>ators RF-G</td> <td>enerator Fil</td> <td>e-IO Layer-</td> <td>4 Generic</td>	Status I	ayer-3 L3	B Endps	VoIP/RTP	VoIP/RTP Endp	s Armage	ddon WanL	inks Attenua	ators RF-G	enerator Fil	e-IO Layer-	4 Generic
Rpt Timer. fast (1 s) Go Test Manager all Select All Start Stop- Quiesce Clear View 0-500 - Go - Go Display Crgate Modify Batch Modify Delete													
View 0-500 Go Display Crgate Modify Batch Modify Delete Layer-4 Endpoints for Selected Test Manager Name EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate Tx Rate Rx Rate (1 min) www002 12.5.162 L4/Gen Stopped 0 <t< td=""><td></td><td>Rpt Timer: 1</td><td>ast (1</td><td>Ls) 🔻</td><td>Go Test Manag</td><td>er all</td><td>-</td><td>Select All</td><td>Start +</td><td>Stop - Quies</td><td>ce Clear</td><td></td></t<>		Rpt Timer: 1	ast (1	Ls) 🔻	Go Test Manag	er all	-	Select All	Start +	Stop - Quies	ce Clear		
Layer-4 Endpoints for Selected Test Manager Name EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate Tx Rate Rx Rate		View	- 500		- 0	0		Display C	reate Mod	ify Batch Mo	dify Delet	te	
Name EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate Tx Rate Rx Ra		L			1 21/2		for Solocted To	et Managor -					
Name EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate IX Rate Rx Ra		1		1	Laye	-4 Endpoints	TOI Selected Te	estimanager		Tu Data		Dy Data	
www002 1.2.5.162 L4/Gen Stopped 0 <td>Name</td> <td>EID</td> <td>Туре</td> <td>Status</td> <td>Total-URLs</td> <td>URLs/s</td> <td>Bytes-RD</td> <td>Bytes-WR</td> <td>Tx Rate</td> <td>(1 min)</td> <td>Rx Rate</td> <td>(1 min)</td>	Name	EID	Туре	Status	Total-URLs	URLs/s	Bytes-RD	Bytes-WR	Tx Rate	(1 min)	Rx Rate	(1 min)	
www003 1.2.6.163 L4/Gen Stopped 0 <td>www002</td> <td>1.2.5.162</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www002	1.2.5.162	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www004 1.2.7.164 L4/Gen Stopped 0 <td>www003</td> <td>1.2.6.163</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www003	1.2.6.163	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www005 1.2.8.165 L4/Gen Stopped 0 <td>www004</td> <td>1.2.7.164</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www004	1.2.7.164	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www006 1.2.9.166 L4/Gen Stopped 0 <td>www005</td> <td>1.2.8.165</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www005	1.2.8.165	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www007 1.2.10.167 L4/Gen Stopped 0 </td <td>www006</td> <td>1.2.9.166</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www006	1.2.9.166	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www008 1.2.11.168 L4/Gen Stopped 0 </td <td>www007</td> <td>1.2.10.167</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www007	1.2.10.167	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www009 1.2.12.169 L4/Gen Stopped 0 </td <td>www008</td> <td>1.2.11.168</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www008	1.2.11.168	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www010 1.2.13.170 L4/Gen Stopped 0 </td <td>www009</td> <td>1.2.12.169</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www009	1.2.12.169	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www011 1.2.14.171 L4/Gen Stopped 0 1 </td <td>www010</td> <td>1.2.13.170</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www010	1.2.13.170	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www012 1.2.15.172 L4/Gen Stopped 0 </td <td>www011</td> <td>1.2.14.171</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www011	1.2.14.171	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www013 1.2.16.173 L4/Gen Stopped 0 </td <td>www012</td> <td>1.2.15.172</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www012	1.2.15.172	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www014 1.2.17.174 L4/Gen Stopped 0 </td <td>www013</td> <td>1.2.16.173</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www013	1.2.16.173	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www015 1.2.18.175 L4/Gen Stopped 0 </td <td>www014</td> <td>1.2.17.174</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www014	1.2.17.174	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www016 1.2.19.176 L4/Gen Stopped 0 </td <td>www015</td> <td>1.2.18.175</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www015	1.2.18.175	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www017 1.2.20.177 L4/Gen Stopped 0 </td <td>www016</td> <td>1.2.19.176</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www016	1.2.19.176	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www018 1.2.21.178 L4/Gen Stopped 0 </td <td>www017</td> <td>1.2.20.177</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www017	1.2.20.177	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www019 1.2.22.179 L4/Gen Stopped 0 </td <td>www018</td> <td>1.2.21.178</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>h 0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www018	1.2.21.178	L4/Gen	Stopped	0	0	h 0	0	0	0	0	0	
www020 1.2.23.180 L4/Gen Stopped 0 </td <td>www019</td> <td>1.2.22.179</td> <td>L4/Gen</td> <td>Stopped</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	www019	1.2.22.179	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
www1 1.2.3.161 L4/Gen Run 1.329 3.517 10,023,200 0 0 0 0 219,071 212,45.	www020	1.2.23.180	L4/Gen	Stopped	0	0	0	0	0	0	0	0	
	www1	1.2.3.161	L4/Gen	Run	1.329	3.517	10.023.200	0	0	0	219.071	212,452	
	•				1,020	0.011					210,011	12,102	

14. Hightlight them, and click **Start**

<u>Control</u> <u>Reporting</u> <u>Tear-Off</u> Info <u>P</u> lugins											
Chamber View Stop All Restart Manager Refresh HE											
Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations DUT Profiles Traffic-Profiles Messages											
Status Layer-3 L3 Endps VolP/RTP VolP/RTP Endps Armageddon WanLinks Attenuators RF-Generator File-IO Layer-4 Generic											
Rpt Timer: fast (1 s) 🔻 Go Test Manager all 💌 Select All Start + Stop - Quiesce Clear											
View 0 - 500 Go Display Create Modify Batch Modify Delete											
Laver-4 Endpoints for Selected Test Manager											
Name EID Type Status Total-URLs URLs/s Bytes-RD Bytes-WR Tx Rate Tx Rate (1 min) Rx Rate Rx (1 min)	Rate										
www002 1.2.5.162 L4/Gen Run 36 2.934 272,687 0 0 0 177,820	178,018										
www003 1.2.6.163 L4/Gen Run 33 2.73 250,064 0 0 0 165,495	166,179										
www004 1.2.7.164 L4/Gen Run 34 2.806 257,605 0 0 0 170,064	170,698										
www005 1.2.8.165 L4/Gen Run 33 2.801 248,853 0 0 0 168,985	169,138										
www006 1.2.9.166 L4/Gen Run 17 1.587 129,408 0 0 0 96,645	96,843										
www007 1.2.10.167 L4/Gen Run 28 2.306 212,359 0 0 0 139,928	140,381										
www008 1.2.11.168 L4/Gen Run 31 2.63 234,982 0 0 0 159,472	159,594										
www009 1.2.12.169 L4/Gen Run 25 2.246 189,736 0 0 0 136,365	136,828										
www010 1.2.13.170 L4/Gen Run 31 2.524 233,771 0 0 0 152,269	152,423										
www011 1.2.14.171 L4/Gen Run 25 2.248 191,184 0 0 0 137,530	138,019										
www012 1.2.15.172 L4/Gen Run 26 2.117 197,277 0 0 0 128,487	128,603										
www013 1.2.16.173 L4/Gen Run 29 2.596 219,900 0 0 0 157,465	157,891										
www014 1.2.17.174 L4/Gen Run 33 2.705 250,064 0 0 0 164,003	164,375										
www015 1.2.18.175 L4/Gen Run 35 2.841 265,146 0 0 0 172,172	172,212										
www016 1.2.19.176 L4/Gen Run 28 2.527 212,359 0 0 0 153,313	153,965										
www017 1.2.20.177 L4/Gen Run 33 2.854 250,064 0 0 0 173,039	173,833										
www018 1.2.21.178 L4/Gen Run 31 2.786 234,982 0 0 0 168,915	169,493										
www019 1.2.22.179 L4/Gen Run 29 2.36 219,900 0 0 0 143,187	143,299										
www020 1.2.23.180 L4/Gen Run 00 3.18 453,671 0 0 0 192,376	192,754										
www1 1.2.3.161 L4/Gen Run 1!439 3.317 10,852,710 0 0 0 217,047	200,419										
	•										
benedia ka jadunud 4000 ee Admin											

- 15. Note that if we were to Right Click \rightarrow Display to show dynamic report
- 16. Right Click \rightarrow Dynamic Report to show dynamic report



A. This shows throughput for all the connections.

B. Notice how crowded this graph is. There is a simpler way to display overall throughput.

17. Next, select the Port Mgr tab.

A. Select resource 2, radio wiphy0

📓 LANforge Manager Version(5.3.9) — 🗆 🗙													
<u>C</u> ontrol <u>R</u> eporting <u>T</u> ear-Off <u>I</u> nfo <u>P</u> lugins													
					Chamber \	/iew	5	Stop All	Resta	rt Manager		Refresh	HELP
Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations DUT Profiles Traffic-Profiles Messages													
Status	Layer	-3 L	3 Endps VolP/RT	TP 1	VOIP/RTP E	ndps	Armageddon	WanLinks	Attenuator	s RF-Ge	nerator File-I	O Layer-4	Generic
	Disp: 19	92.168.	100.136:0.0	Snit	ff Packets		Down 1	Clear Cour	nters F	Reset Port	Delete		
F	Rpt Time	er: med	ium (8 s) 🔻		Apply		VRF I	Disp <u>l</u> ay	y	Cr <u>e</u> ate	Mo <u>d</u> ify	<u>B</u> atch Modi	fy
					All	Etherne	t Interfaces (Port	s) for all Reso	ources				
Port	Phan	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX
1.1.12			10.136.0.1	0	b1000		29,472,718	498,801	714	338,384	350,517,462	262,003	37 🔺
1.2.00			192.168.100.204	0	eth0		50,417,464	366,437	64	67,642	1,443,767,448	1,067,982	17
1.2.01			0.0.0.0	0	eth1		83,496	461	0	0	3,418	43	=
1.2.02		~	0.0.0.0	0	eth2	1	0	0	0	0	0	0	
1.2.03			10.136.0.70	0	sta1000	wiphy0	32,227,757	39,232	34	231,821	4,249,441	45,735	4
1.2.04			0.0.00	0	wiphy0		481,580,802	868,496	756	4,935,819	45,479,244	507,221	71
1.2.05			10.136.0.89	0	sta1001	wiphy0	17,212,070	21,510	32	217,238	2,310,505	24,739	3
1.2.06			10.136.0.72	0	sta1002	wiphy0	17,558,579	21,939	31	215,423	2,348,721	25,209	3 🗸
										•			
Logged in to: localhost:4002 as: Admin													

B. Right Click \rightarrow Dynamic Report to show dynamic report

🛃 LANf	orge Manager	Version(5.3.9)									
<u>C</u> ontrol	Reporting Te	ear-Off <u>I</u> nfo <u>P</u> lugi	ns								
Chamber View				Stop All	Restart Manager		Refresh	HELP			
Test Mgr / Test Group / Resource Mgr / Event Log / Alerts / Port Mgr / vAP Stations / DUT / Profiles / Traffic-Profiles / Messages											
Status Layer-3 L3 Endps VolP/RTP VolP/RTP Endps Armageddon WanLinks Attenuators RF-Generator File-IO Layer-4 Generi										Generic	
	Disp: 192.168.	.100.136:0.0		iff Packets	1			Delete			
						Clear Selected	_				
	Rpt Timer: med	lium (8 s) 🔽		Apply		Modify Selected	F	Modify Batch Modify			
All Ethernet						Reset Selected					
						Reset Selected (Logout)					
Port	Phan Down	IP	SEC	Alias	Parent	Display Selected	L	TX Bytes	TX Pkts	Pps TX	
					Dev	> Dynamic Report	D				
1.1.12		10.136.0.1	0	b1000		Table Report		386,636,016	289,115	32 🔺	
1.2.00		192.168.100.204		eth0		Table Report		462,345,609	1,082,836	16	
1.2.01		0.0.0.0	0	eth1		Count Selected	Number Sign	3,418	43		
1.2.02		0.0.0.0		eth2	unin hur O	Calculations	1	0	0		
1.2.03				sta1000		View Logs		4,527,987	48,700	3	
1.2.04		10.126.0.90		wiphyu		Sreate Laver-3 CX	3	49,832,484	27 220		
12.05		10.136.0.72		sta1001	wiphy0	Oham Open	N	2,534,431	27,520	4	
12.00		10 136 0 71	0	sta1003	wiphy0	Show Scan	IN	2,500,885	26,821	2=	
1.2.08		10.136.0.73		sta1004	wiphy0	Do Probe	P	2.467.113	26,467	3	
1.2.09		10.136.0.75		sta1005	wiphy0	Add/Remove Table Columns	5	2,506,057	26,891	3	
1.2.10		10.136.0.76	0	sta1006	wiphy0	Add/Romaya Table Report C	olumos	2,659,869	28,535	3	
1.2.11		10.136.0.80		sta1007	wiphy0	Additemove Table Report C	Volumino	2,460,757	26,395	2	
1.2.12		10.136.0.78		sta1008	wiphy0	Save Table Layout		2,605,743	27,952	3	
1.2.13		10.136.0.74	0	sta1009	wiphy0	Reset Table Layout		2,626,557	28,179	3	
1.2.14		10.136.0.77		sta1010	wiphy0	Auto-Resize Columns	2,565,771	27,526	3		
1.2.15		10.136.0.88	0	sta1011	wiphy0		2,425,013	26,013	3		
1.2.16		10.136.0.81	0	sta1012	wiphy0	Attenuator inroughput		2,595,479	27,884	3	
1.2.17		10.136.0.79		sta1013	wiphy0	Port Bringup Test		2,528,367	27,116	2	
1.2.18		10.136.0.85		sta1014	wiphy0	Port Monitor		2,658,819	28,536	4	
1.2.19		10.130.0.84	U	statuto	wiphyo	Port Reset Test		2,504,423	27,535		
						WiFi Capacity Test					
Logged	in to: localhost	:4002 as: Admin				MiEi Mobility					

C. See the overall througput through the radio



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