

Testing AP performance and stability with the AP-Auto Stability test.

Goal: Setup and run a AP-Auto test for an AP using theTR-398 test bed in order to test how well the AP can handle station load, performance, and stability while Stations are being reset. This test can run on standalone LANforge systems without the TR-398 components: A 2-radio LANforge system and DUT is all that is required to run these tests.

In this test scenario, a 6-radio LANforge CT523 is used to create stations and run the AP-Auto Stability test. This example assumes you have some experience with Chamber View, and that you have a LANforge system and a DUT AP. The AP and LANforge may be in chambers, but that is not required. This feature requires LANforge version 5.4.2 or higher.



- 1. Configure Chamber View for AP-Auto and Similar Tests.
 - A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. If you have an appropriate scenario and DUT already created, then skip to the next section, otherwise you will need to build a scenario that matches your system. You can right-click in Chamber View to create various objects. When complete, your configuration should look something like this.



Β.	Create a Device Under Test (DUT) Profile that matches your AP. The BSSID is important to configured so that
	LANforge knows when it is connected to the correct AP.

•	Create/M	odify DUT	\odot	(\mathbf{x})							
Name	TR398-DUT										
Image file	NONE		Choose Image 🛛 🗙								
SW Info		HW Info									
Model Number		Serial Number									
Serial port		WAN									
LAN		API version	0								
SSID-1	NETGEAR68-5G	Password-1	aquaticbug712								
SSID-2	NETGEAR68	Password-2	aquaticbug712								
SSID-3		Password-3									
Mgt IP	0.0.0.0	Num Ant Radio 1	0								
Num Ant Radio 2	0	Num Ant Radio 3	0								
BSSID-1	78:d2:94:4f:21:78	BSSID-2	78:d2:94:4f:21:76								
BSSID-3	0:00:00:00:00:00	✓ Active	AP DUT								
STA DUT	WEP	WPA	WPA2								
WPA3	🗌 802.11r	802.1x EAP-TTLS	Provides DHCP on LAN								
Provides DHCP on WAN											
Notes											
	<u>Apply</u> <u>OK</u> <u>C</u> ancel										

C. Configure a Chamber View Scenario and add the STA profile (mapped to desired wiphyX radio and DUT). Add an upstream profile mapped to DUT LAN side (or possibly WAN side if that is more appropriate for your DUT). The traffic flow in the scenario is not required for the AP-Auto test, but it will not cause any trouble if you have traffic configured in the scenario.

Create/Modify Scenario											\odot										
Scenario Text Output																					
	Scenario Name simpleThput 💌 Delete Scenario Create Profile Create Traffic Profile Add Row																				
D	el Re	esour	rce	Profile		Amount			Uses-1		Uses-2		Freque	ency			Maps To			Traffic-1	
>	< 1.	.1	•	STA: STA-AC	•	20 (20)		•	wiphy0	•	AUTO	•	AUTO ((-1 M	lhz)	•	DUT: TR398-DUT	Radio-1	•	voip	-
>	< 1.	.1	•	Upstream: upstream	•	1 (1)		•	ethl	•	AUTO	•	Αυτο ((-1 M	lhz)	-	DUT: TR398-DUT	LAN	•	NA	-
4																					▶
Build New Load Scenario								<u>U</u> pda Save		and enario						<u>A</u> pply and Save Scenari	0		<u>C</u> ar	ncel	

2. Use Chamber View for the AP-Auto Mix-Stability test.

A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. Load appropriate scenario. Apply the Scenario, then Build the scenario.



B. Select the AP-Auto test and click Run Test. You should see the AP-Auto Test configuration window pop up. It will remember the last configuration for most fields, and you can also save and load configurations on the 'Advanced Configuration' tab.. Select the DUT 2G and DUT 5G SSIDs. This test requires that Open or PSK is filled out. The enterprise SSID is optional. Use 'NA' for SSIDs that are not enabled. Select the LANforge radios to be used in this test. You need at least one 2.4Ghz radion and one 5Ghz radio for full functionality. At the bottom, select the test cases to be run.:

•			AP Auto	ma	ted Test				\odot \otimes \times
Capacity Configuration	Pass/Fail	Configuration	Report Conf	igu	ration Report	1 ×			
Settings		Advance	d Configuratio	on				Stability Configuration	
		Open DUT			PSK DUT			Enterprise DUT	
Selected DUT 2G:		TR398-DUT NE	TGEAR68	-	NA		-	NA	-
Selected DUT 5G:		TR398-DUT NE	TGEAR68-5G	•	NA		-	NA	-
Upstream Port:		1.1.1 eth1		-					
2.4Ghz Radios		5Ghz Radios							
1.1.8 wiphy1	-	1.1.3 wiphy0		•					
1.1.9 wiphy3	-	1.1.5 wiphy2		•					
1.1.10 wiphy5	-	1.1.7 wiphy4		-					
	•			•					
	-			-					
	-			•					
	-			•					
	-			-					
Tests to run:		Estimated Test	: Duration: 7 r	n					
Basic Client Cor	nnectivity	🔲 Throughput	vs Pkt Size						
🗌 Dual Band Perfe	ormance	Capacity							
🖌 Stability		Long-Term							
					<u>S</u> tart	Another Ite	rati	on 🗌 Pause	<u>C</u> ancel

C. The Advanced Configuration tab lets you save and restore test configurations and also tune the behaviour of the automated tests. Station counts and skipping the single-band tests are the main options that affect this test.

•				AP Autom	ate	d Test			 × ×
Capacity	Configuration	Pass/Fail Cor	nfiguration	Report Confi	gura	ation Repo	ort î 🗙		
Se	Settings			Configuration				Stability Configuration	
	Sa	ve	DEFAULT						
	Loa	əd	DEFAULT		•				
	Dele	ete	DEFAULT		-			🖌 Auto-Helper	
	IP ToS:		Best Effort	t (0)	-	Multi-Conn:		One (1)	•
	Skip 2.4Ghz	Tests	🗹 Skip 5Gh	z Tests		🗌 Skip Dual	-Band Test	s	
	Loop Iterations		Single	(1)	-				
	2.4Ghz Station	Count:	Small (32)		•	5Ghz Station	Count:	Default (64)	-
	Dual-Band Stat	ion Count:	Default (64)						
	Duration:		Default (20	sec)	-				
	Long-Term Dow	nload Rate:	85%		•	Long-Term U	pload Rate	85%	-
	Long-Term Dura	ation:	300 (5 min)		▼	Long-Term G	raph Interv	/al: 30 (30 sec)	-
	Long-Term Stat	tion Count:	Two (Defaul	t) (2)	-				
	Hunt Retries:		Default (1)		•				
	Frame Sizes:		200, 512, 1	024, MTU	_				
	Capacity Amou	nts (stations):	1, 10, 32, 6	4,128					
	Packet Loss Th	reshold:	1% (1%)		•				
				<u>S</u>	tart		nother Iter	ration 🗌 Pause	<u>C</u> ancel

D. The Stability Configuration tab lets specify the mix of traffic for this test. Select the traffic types, pass/fail thresholds, and port reset behaviour.

•	AP Automated Test												
Settin	igs Advanced Configuration Sta	ability Configuration	Сара	pacity Configuration Pass/Fail Configuration Report Configur									
	Stability Duration:	300 (5 min)	•	Reset Radios									
	Concurrent Ports to Reset:	Single (1)	•]									
	Minimum Time between Resets:	20 seconds (20 s)	•	Maximum Time bet	ween Resets:	30 se	conds (30 s)	•					
	VOIP Call Count:	Ten (10)	•]									
	Video Emulation Rate:	SD 360p (700 Kbps)	-	Video Buffer Size:		500k	(488.28125 KB)	•					
	Stability UDP Min Download Rate:	500000 (500 Kbps)	-	Stability UDP Max [Download Rate:	ті	(1.544 Mbps)	-					
	Stability UDP Min Upload Rate:	500000 (500 Kbps)	-	Stability UDP Max (Jpload Rate:	ті	(1.544 Mbps)	•					
	Stability TCP Min Download Rate:	500000 (500 Kbps)	-	Stability TCP Max D	ownload Rate:	ті	(1.544 Mbps)	•					
	Stability TCP Min Upload Rate:	500000 (500 Kbps)	-	Stability TCP Max U	Ipload Rate:	ті	(1.544 Mbps)	•					
	Stability stall threshold UDP Upload:	100000 (100 Kbps)	-	Stability stall thres	hold UDP Download:	100000	(100 Kbps)	•					
	Stability stall threshold TCP Upload:	100000 (100 Kbps)	-	Stability stall thres	hold TCP Download:	100000	(100 Kbps)	•					
	Stability stall threshold Video:	100000 (100 Kbps)	•	Stability stall thres	hold VOIP:	Zero (0 bps)	•					
				<u>S</u> tart	Another Iteration	F	Pause <u>C</u>	ancel					

E. When the configuration is complete, click the **Start** button (which will change to 'Stop' once start is clicked) to start the test. An interactive report tab will be created and will be updated as the test runs.

•			AP Automated Te	est			 					
Settings	Advanced Configuration	Stability Configuration	Capacity Configuration	Pass/Fail Configuration	Report Configuration	Report 🕇 🗙						
						-						
	Mix Stability											
	Summary											
	link is continuously stations supports t settings. You can c downloading a bine The test is considered fa The Candela Score for th • 34%: total-station • 33% stations-wit	working, VOIP traffic hat, but it will use 2.4 configure the number ary file over and over a iled if any stations reco he Mix Stability test is o	calculated as: nt + reconnects + conn w + bad-bw)	n, preferring 2.4Ghz to 5 to 5Ghz stations too as r IP Call Count' field. Em ed (see the 'Video Emuk n has less than 5kbps ov	5Ghz station calls if th needed VOIP calls use ulated Video traffic is ation Rate' and 'Video	he number of ed 'VO' QoS s created by b Buffer Size')	-					
			Station disco	innect stats								
			Port Res									
	130											
Test is con Consider s	iplete. aving HTML or PDF reports.		Verb	posity:	<u></u> lose	Save HTML	Save PDF					
				Start A	nother Iteration [Pause	<u>C</u> ancel					

F. When the test is complete, click the **Save HTML** button to save an HTML report and generate the PDF. The PDF file will be linked from the HTML page. You can also click 'Save PDF' and the browser will be directed to open the pdf file directly. Please see this example AP-Auto Stability Report.

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