

AP-Auto Test Suite Setup and basic AP client connectivity testing.

Goal: Setup AP-Auto preliminaries and run a basic client connectivity test for an AP using the ANforge CT523c or similar system. The AP-Auto test is similar to the TR-398 test, but is designed to be functional with a minimum amount of test equipment. 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 Basic Client Connectivity 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. Click on the **Chamber View** button in the LANforge GUI to launch the *Chamber View* screen.

LANforge Manager Version(5.3.9)												\odot	×			
Control Reporting Tear-Off Info Plugins																
Chamber View Stop All Restart Manager Refresh H												HE	ELP			
Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations DUT Profiles Traffic-Profiles Messages												eric				
Disp: 127.0.0.1:10.0 Sniff Packets Down 1 Clear Counters Reset Port Delete																
	Rpt 1	Timer:	medium (8 s) 🗖	-	Apply			I		Disp <u>l</u> ay	C	r <u>e</u> ate M	10 <u>d</u> ify	Batch Modi	fy	
						-All Eth	ernet Interface	s (P	orts) fo	or all Resour	rces. —					
Port	Pha	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX	Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX	Cc
1.1.00			192.168.100.115		eth0		175,026,306	2,39	96,899	14	10,594	120,939,485	202,964	15	120,877	7
1.1.01			192.168.1.2	0	ethl		38,128,262	104	,724	59	31,420	985,775,12	828,421	2,380	28,381,	
1.1.02			0.0.0.0		wiphy0				1,546)
1.1.03			0.0.0.0	0	wiphyl		0		1,050	0	0	0	0	0	()
1.1.04			0.0.0.0	0	wiphy2	-	960,264,44	184	,882	605	27,852	40,178,460	104,816	58	39,416	2,2
1.1.05			0.0.0.0		wiphy3		37,357,777	25,								1

B. Configure an AP under test (DUT).

		Chamber View			0.2-03	$(\mathbf{x}, \mathbf{v}, \mathbf{x})$
Q	Scer	-	<u>M</u> anage Scenarios			
e 1 New Chamber	Name SW Info Model Number	Create/Mo AP-Test-Demo v3.24.1.5 AP101	dify DUT 3 Image file 3 HW Info Serial Number	::\documents\ap.jpg		MyFirstApTest Apply Scenario
New DUT New Profile New Traffic Profile Play All Paths	Serial port LAN SSID-1 SSID-2 SSID-3 Mgt IP Ant-2	192.168.1.1 labap 192.168.100.193 0	WAN API version Password-1 Password-2 Password-3 Ant-1 Ant-3	192.168.100.193 v2.3 lanforge 0 0		Iests: Scenario Test ▼ Run Test Snap Report
	BSSID-1 BSSID-3	78:d2:94:bf:16:41 00:00:00:00:00:00	BSSID-2	78:d2:94:bf:16:43		
	WPA3 Notes	WEP Provides DHCP on LAN tested with special firmware	Provides DHCP on WA	V WFAZ		
		Apply	<u>QK</u> <u>C</u> ancel			

- C. To configure the DUT:
 - A. Right click anywhere on the canvas in Chamber View and select New DUT from the menu.
 - B. Enter all the known details about the AP under test including the SSID (multiple SSIDs if the AP has multiple SSIDs), BSSID (multiple BSSIDs if the AP has multiple radios with the same SSID).
 - C. If the AP has security enabled, enter the security information.
 - D. Set the DUT to Active by checking the **Active** checkbox.
 - E. Select the **AP DUT** checkbox to indicate that this DUT is an Access Point.
- D. Once **OK** is clicked, check to make sure the DUT appears in *Chamber View* as shown below.

Chamber View	
Scenario Configuration: MyFirstApTest	Manage Scenarios MyFirstApTest V Apply Scenario

E. Select the LANforge system to be used in the test.



- F. All active LANforge systems will automatically appear in *Chamber View*. Select the unit being used in the test and drag to the middle of the canvas next to the AP under test. The small circles inside the LANforge box represent the SMA connectors. The columns of circles represent the individual radios in the system. For instance, in the screenshot above LF-1 has 8 columns of circle indicating 8 radios. The first four are 4x4 radios and the next four are 2x2 radios with 2 circles each.
- G. Create the test scenario



Click on the Manage Scenarios button and then open a Create/Modify dialog box.

- H. In the Create/Modify dialog box
 - A. Click on **Build New** button to create a new scenario.
 - B. Enter a scenario name e.g: 'SimpleThput' (no spaces allowed)
 - C. Click Add Row button to add one or more rows.
 - D. 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).
 - E. Choose Apply and Save Scenario

2. Configure AP-Auto settings and run Basic Client Connectivity test.

A. Ensure that the correct scenario is chosen, then click Build 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 in the *Advanced Configuration* tab.

				AP A	utomated Test (cv-inst-0)				
Settings	Advanced Configuration	Stability Configuration	Mode/NSS/BW Configuration	Pass/Fail Co	onfiguration Report Configuration				
		-							
		Open DUT			PSK DUT		Enterprise DUT		
Select	ed DUT 2G:	AP-Test-Demo as	us-ax11000-2 f0:2f:74:57:db:b0	(1) 🔽	NA		NA		-
Select	ed DUT 5G:	AP-Test-Demo as	us-ax11000-5 f0:2f:74:57:db:b4	(2) 💌	NA		NA		-
Select	ed DUT 5G-B:	NA		-	NA		NA		-
Upstre	am Port:	1.1.3 eth3		-					
2.4Ghz	Radios	5Ghz Radios			Shz-B Radios		Dual-Band Radios		
1.1.4	wiphy0	 1.1.6 wiphy2 				~	1.1.6 wiphy2		-
									-
		-		-					-
				-					-
		-		-					-
		-		-		-			-
		-		-		-			-
		-		-					-
sts t	to run:	Estimated Test Du	iration: 4 m						
🗹 Bas	sic Client Connectivity	Throughput vs	Pkt Size						
🔲 Mul	lti Band Performance	Capacity							
🗌 Sta	bility	Band-Steering							
🔲 Mul	lti-Station Throughput vs Pkt	: Size 🔲 Long-Term							
						Start	Another Iteration	Pause	Cancel

C. In the AP-Auto Settings Tab

- A. Select the **DUT 2G** and **DUT 5G** SSIDs. This test requires that Open or PSK SSIDS are filled out. For SSIDs that are not enabled, leave as 'NA'.
- B. Select the LANforge radios to be used in this test. You need at least one 2.4Ghz radio and one 5Ghz radio for full functionality.
- C. At the bottom, select the **Basic Client Connectivity** test checkbox.

D. Located Next to the *Settings* Tab, 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 Automated Test (cv-inst-0) 🛛 📃 🗆 🛛										
Settings Advanced Configuration	Stability Cor	nfiguration	M	Iode/NSS/BW Configuration	Pass/Fail Configuration	Re	port Configuration			
Show Config	Import	Config								
Save	DEFAULT									
Load	DEFAULT		Ŧ							
Delete	DEFAULT		•		🖌 Auto-Helper					
IP ToS:	Best Effort	(0)	•	Multi-Conn:	One (1)	-				
Skip 2.4Ghz Tests	🖌 Skip 5Ghz 1	Tests		Skip Dual-Band Tests	🕑 Skip 5Gzh-B Tests		🖌 Skip Tri-Band Tests			
🖌 Use BSSID	🖌 Set Radio 1	TxPower to D)ef	ault						
Loop Iterations:	Single	(1)	•							
2.4Ghz Station Count:	5		•	5Ghz Station Count:	10 (10)	-				
Dual-Band Station Count:	10		•	5Ghz-B Station Count:	Default (64)	-				
Tri-Band Station Count:	Default (64)		•							
Duration:	Default (20 se	ec)	•							
Long-Term Download Rate:	85%		•	Long-Term Upload Rate:	85%	-				
Long-Term Duration:	lh		•	Long-Term Graph Interval:	30 (30 sec)	-				
Long-Term Station Count:	Two (Default)	(2)	•							
Hunt Retries:	Default (1)		•	Maximum Hunt Iterations:	100	-				
Packet Loss Threshold:	1% (1%)		•							
Frame Sizes:										
Capacity Amounts (stations):										
Multi-Station Throughput Options:		P 🗹 Downlo	ad	Upload						
Test is complete.		<u>S</u> 1	tar	Skip	Another Iteration	Pa	ause <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 Autor	ated Test (cv-inst-0)								
Settings	Advance	ed Configuration	Stability Configuration	Mode/NSS/BW Configuration	Pass/Fail Configuration	Report Configuration	Report 🕈 🛪						
									A				
		 Basic Clie	ent Connectivity										
		Summary											
		The Maximum Connection test intends to verify that the Wi-Fi AP can support many STAs simultaneously and connect them within a specific time frame. No data traffic is generated during this test. The pass/fail thresholds for connection times are below. The entire test will count as failed if the passing station percentage is below the Percent threshold (100.00%) or if any of the stations failed to connect.											
		Auth Meth	od Threshold										
		Open	25 ms										
		PSK	60 ms										
		802.1x Enterp	prise 120 ms										
		percentage of	stations that connected	l, and 25% is based on the pe	ercentage that met the	association time criter	ria.						
				Station connection times for a Station C	lifferent bands and DUT co connect Times	onfigurations.		1					
		130											
		120											
		110											
		(su 90		_									
		e (L		•									
		E 70											
		10 00 C											
		40											
		Ŭ 30											
		20							-				
Test is con Consider s	nplēte. aving HTML	or PDF reports.			Ver	bosity: 0 1 2 3 4 5	6 7 8 9 1011	se Sa <u>v</u> e HTM	L Save <u>P</u> DF				
Test is c	omplete.				Start	Skip	Another Iteration	Pause	<u>C</u> ancel				

F. Consider changing the test result verbosity level by adjusting the **Verbosity** slider. Maximizing it will show all generated figures and data. The verbosity level also affects the length of the saved report.

G. At the end of the test, 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 Basic Client Connectivity Report.

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