

## The Neutron Series Distributed Network Management Solution





# Maintenance and Troubleshooting



## EnGenius®

## WLAN Lifecycle

#### Design

- Identify stakeholders
- Gather requirements
- Identify network components, locations, and settings
- Standardize configurations
- Deploy
  - Provision and Install
  - Validate coverage / capacity performance
  - Document
- Monitor and Report
  - Continuously monitor performance
- Troubleshoot and Remediate
  - Identify and troubleshoot issues
  - Make changes and Document
- Optimize and Grow
  - Tune and optimize network
  - Identify areas for growth





- Local and remote (syslog) logging of events
- Email alerts customizable (i.e. control types of incidents reported by email)

Device Control Statistics Vis	sualization Update Security						
Basic Account Setting	Time 👻	Category \$	Severity	Message		*	
EzRegister Registeration	May 25 16:49:29	Switch	info	EWS5912FP(00:02:6F:AA:AA:AB) online with uptime 270562 seconds			
EzRegister Setting	May 25 16:47:52	Switch	warning	EWS5912FP(00:02:6F:AA:AA:AB) offline			
Event Logs	May 25 16:46:42	Switch	info	EWS5912FP(00:02:6F:AA:AA:AB) online with uptime 270396 seconds	Mail Ale	rt	
Remote Longing List	May 25 16:46:27	Switch	warning	EWS5912FP(00:02:6F:AA:AA:AB) offline			
Remote Logging List	May 25 14:17:51	Switch	info	EWS5912FP(00:13:32:33:88:86) online with uptime 784075 seconds	Mail Inf	formation Setting	
Remote Logging Setting	May 25 14:17:27	Switch	warning	EWS5912FP(00:13:32:33:88:86) offline		or induced of the g	
Advanced	May 25 07:30:19	Switch	info	EWS5912FP(00:02:6F:AA:AA:AB) online with uptime 237014 seconds		CMTD Commen	ante en elleren
	May 25 07:28:43	Switch	warning	EWS5912FP(00:02:6F:AA:AA:AB) offline		SWIP Server.	smp.gmail.com
	May 25 07:27:33	Switch	info	EWS5912FP(00.02.6F:AA:AA:AB) online with uptime 236847 seconds		SMTP Port:	465
	May 25 07:27:17	Switch	warning	EWS5912FP(00:02:6F:AA:AA:AB) offline		Support COL/TLC.	Enable  O  Disable
	May 25 04:47:57	Switch	info	EWS5912FP(00:13:32:33:88:86) online with uptime 749882 seconds		Support SSE/TES.	
	May 25 04:47:33	Switch	warning	EWS5912FP(00:13:32:33:88:86) offline		Authentication:	Enable O Disable
	May 24 22:05:59	Switch	info	EWS5912FP(00:02:6F:AA:AA:AB) online with uptime 203153 seconds		Llear Namo:	light smith
	May 24 22:04:06	Switch	warning	EWS5912FP(00:02:6F:AA:AA:AB) offline		User Marine.	Jonn.siniur
	May 24 22:02:56	Switch	info	EWS5912FP(00:02:6F:AA:AA:AB) online with uptime 202971 seconds		Password	
	May 24 22:02:44	Switch	warning	EWS5912FP(00:02:6F:AA:AA:AB) offline		i doonord.	show password
	May 24 22:01:34	Switch	info	EWS5912FP(00:02:6F:AA:AA:AB) online with uptime 202888 seconds		Mail Address:	iohn.smith@gmail.com
	May 24 22:01:18	Switch	warning	EWS5912FP(00:02:6F:AA:AA:AB) offline			
	May 24 19:17:55	Switch	info	EW\$5912EP(00:13:32:33:88:86) online with untime 715679 seconds			



EnGenius EWS75 ×		
	2.168.4.30/index.html?140801-2200#	💹 🏡 🤷 💆 🗉
EnGenius®		별 📩 🔿 🙂 🖻 Backup Upgrade Reset Reboot Logout
EWS7928P	24-Port Gigabit PoE+ L2 Wireless Management Switch with 4 Dua	al-Speed SFP Q Search
Controller   Switch	Log Table	
🗘 System	Select Log Target: RAM 🔹	
L2 Feature		
Stan VLAN	No. Timestamp Category Severity Message	loise
A Management	Dec 31 19:34:22 VEAN Notice VEAN 64 handle is changed to V  Dec 31 19:34:22 VEAN  Notice VEAN 64 handle is changed to V	
× ACL	2 Dec 31 15.34.22 VLAN Holice VLAN 64 is added, default ham	
L QoS	3 Dec 31 19:33:21 VLAN notice VLAN 32 name is changed to D	Jevice
Security	4 Dec 31 19:33:21 VLAN notice VLAN 32 is added, default name	e is VLAN0032
La Monitoring	5 Dec 31 19:28:11 VLAN notice VLAN 4000 name is changed to	o Mgmt
Port Statistics	6 Dec 31 19:28:11 VLAN notice VLAN 4000 is added, default na	ame is VLAN4000
▶ RMON	7 Dec 31 19:27:25 VLAN notice VLAN 24 name is changed to U	Jser Wired
✓ Log	8 Dec 31 19:27:25 VLAN notice VLAN 24 is added, default name	ne is VLAN0024
Global Settings	9 Dec 31 19:26:40 VLAN notice VLAN 16 name is changed to U	Jser WiFi
Pomoto Logging	10 Dec 31 19:26:40 VLAN notice VLAN 16 is added, default nam	ie is VLAN0016
Log Table	11 Dec 31 19:25:36 VLAN notice VLAN 8 name is changed to Str	aff
	12 Dec 31 19:25:36 VLAN notice VLAN 8 is added, default name	is VLAN0008
- Enagriosaics	13 Dec 31 19:07:37 System notice web user admin authentication	failed.
	14 Dec 31 19:00:47 Platform notice Port 5 PoE status is delivering a	power
	15 Dec 31 19:00:46 System notice System Startun	
	to Decisi to.ou.40 System notice System Stattup!	



- Overview of AP locations in a multi-building environment
- Useful for campus and/or mesh deployments





- Locate APs on floor plan image
- Accommodate multi-floor buildings with an image for each floor
- Estimate coverage area (does not account for structure)





- Know exactly which port on a specific switch that a particular AP is plugged into
- Identify
  - Port info
  - Changes
  - Offline APs
  - 3<sup>rd</sup> party
    switches





#### Troubleshooting



- Basic Troubleshooting of Connectivity
- Enables quick identification and remediation of problems



- **Cable Diagnostics:** Validates all four Ethernet cable pairs are connected to attached device
- Ping: Useful for validating backhaul, presence of other network devices, & Internet connectivity
- **Trace Route:** Useful for showing internet hops between network and remote server.

EnGeniius®								Hackup	Upgrade Res	t Reboot Logout
EWS7928P	24-Port Gigabit	PoE+ L2	Wireless Mana	gement Switch with 4	Dual-Speed SFP					h i
Controller   Switch	Cable Diagr	nostics			// in indianated					
System	Port	in is only to	Pair A	Cable Length A (meter)	Pair B	Cable Length B (meter)	Pair C	Cable Length C (meter)	Pair D	Cable Length D (meter)
VLAN	Port 5	•	OK		ОК		ОК		ОК	
🐣 Management										
X ACL	Test									
Security										
🛃 Monitoring										
No. 14 Diagnostics										
Cable Diagnostics Ping Test										
IPv6 Ping Test										
Trace Route										



## Neutron<sup>™</sup> Tools for Troubleshooting: Port Settings

EnGenius EWS75 ×							
← → C ♠ 🗋 192.16	58.4.30/inde	k.html?140	0801-2200#				🖾 🗠 😻 🗉
EnGeniius®					H Backup	<b>⊥ ∕</b> Upgrade Reset	U ⊡ Reboot Logout
EWS7928P	24-Port (	Gigabit Po	E+ L2 Wireless Ma	anagement Switch wi	ith 4 Dual-Speed SF	P Q Search	
Controller   Switch	Port S	ettings					
System		Port	Link Status	Mode	Flow Control		
Summary				Auto 🔻	Disabled •		
▷ IP Settings		1	Link Down	Auto	Disabled		
System Time		2	Link Down	Auto	Disabled		
Port Settings		3	Link Up	Auto-1000M/Full	Disabled		
▶ PoE		4	Link Down	Auto	Disabled		
EEE		5	Link Up	Auto-1000M/Full	Disabled		
L2 Feature		6	Link Down	Auto	Disabled		
VLAN		7	Link Down	Auto	Disabled		
Management		8	Link Down	Auto	Disabled		
X ACL		9	Link Down	Auto	Disabled		
QoS		10	Link Down	Auto	Disabled		
		11	Link Down	Auto	Disabled		
		12	Link Down	Auto	Disabled		
		13	Link Down	Auto	Disabled		
		14	Link Down	Auto	Disabled		
		14	Link Down	Auto	Disabled		
		15	Link Down	Auto	Disabled		
		16	Link Down	Auto	Disabled		

- Are access points and other devices connected?
- Are the link and duplex settings correct?



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← → C ♠ 🗋 192.168.4	→ C f [] 192.168.4.30/index.html?140801-2200#													
EnGeniius®							Ba	<b>∐ ⊥ ⊙</b> ackup Upgrade Rese	U Reboot Logout					
EWS7928P	24-Port G		Q Search											
Controller   Switch	PoE Po	ort Set												
System		Port	State	Priority	Power Limit Type	User Power Limit (W)	Status	Class	Output Voltage (V)	Output Current (mA)	Output Power (W)			
Summary			Enabled •	Low •	Auto Class 🔹									
▷ IP Settings		1	Enabled	Low	Auto Class		Searching							
System Time		2	Enabled	Low	Auto Class		Searching							
Port Settings		3	Enabled	Low	Auto Class		Searching							
▲ PoE		4	Enabled	Low	Auto Class		Searching							
Power Budget		5	Enabled	Low	Auto Class		Delivering	4	53.7	79	4.2			
PoE Port Settings		6	Enabled	Low	Auto Class		Searching							
		7	Enabled	Low	Auto Class		Searching							
		8	Enabled	Low	Auto Class		Searching							
Management	-	9	Enabled	Low	Auto Class		Searching							
		10	Enabled	Low	Auto Class		Searching							
A OOS		10	Enabled	Low	Auto Class		Caerching							
		10	Enabled	LOW	Auto Class		Searching							
		12	Enabled	LOW	Auto Class		Searching							
		13	Enabled	Low	Auto Class		Searching							
- Diagnostics		14	Enabled	Low	Auto Class		Searching							
		15	Enabled	Low	Auto Class		Searching							
		16	Enabled	Low	Auto Class		Searching							

- Are access points and other devices powered?
- Are PoE devices receiving enough power?

# EnGenius®

- L2 Feature → MAC Address Table
- Shows which MAC addresses are connected to which ports
- Very useful diagnostic tool for 3<sup>rd</sup> party devices

EnGenius				
EWS7928P	24-Port Giga	abit PoE+ L2 Wir	eless Manageme	ent Switch with 4 Dual-
Controller   Switch	Dynamic	MAC Address	5	
🗘 System	Index	Port	VID	MAC Address
< L2 Feature	1	21	1	00:07:E9:D6:C9:77
Link Aggregation	2	21	1	00:0B:78:66:C9:14
Mirror Settings	3	21	1	00:0C:41:82:4F:2B
▷ STP	4	21	1	00:26:C7:AA:6A:54
MAC Address Table	5	21	1	34:A3:95:94:D2:11
Static MAC Address	6	21	1	34:A3:95:96:0F:AE
Dynamic MAC Address	7	21	1	58:BC:27:F1:A1:AD
▶ LLDP	8	22	1	74:D4:35:E3:13:E6
IGMP Snooping  MLD Sagarian	9	23	1	88:DC:96:0E:94:0B
Jumbo Frame	10	23	1	88:DC:96:0E:94:20
	11	23	1	88:DC:96:17:40:0E
Management	12	3	1	88:DC:96:17:40:DE
∡ ACL	13	5	1	88:DC:96:1E:7E:C0
🕹 QoS	14	21	1	EC:E0:9B:B4:44:C0
🔑 Security	15	21	1	FC:4D:D4:F3:6D:3D
🛃 Monitoring	16	3	1	FC:E5:28:53:8C:D8
* Diagnostics		-		



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E	nGeniius®										В	Hackup Up	<b>⊻ €</b> grade Re	) Ů set Reboo	Det Logout	ľ
	EWS7928P	928P 24-Port Gigabit PoE+ L2 Wireless Management Switch with 4 Dual-Speed SFP												:h		
	Controller   Switch	Port St	atistics													
🏚 s	ystem		Port	RXByte	RXUcast	RXNUcast	RXDiscard	TXByte	TXUcast	TXNUcast	TXDiscard	RXMcast	RXBcast	TXMcast	TXBcast	
<b>&lt;</b> L	2 Feature															
	LAN		1	0	0	0	0	0	0	0	0	0	0	0	0	
📥 M	lanagement		2	0	0	0	0	0	0	0	0	0	0	0	0	
24 A	CL		3	194420	32	451	0	3056976	39	21949	0	450	1	11714	10235	
⊸L Q	oS		4	0	0	0	0	0	0	0	0	0	0	0	0	
🔑 S	ecurity		5	205050	32	516	0	3056017	39	21942	0	515	1	11707	10235	
В М	onitoring		6	0	0	0	0	0	0	0	0	0	0	0	0	
P	ort Statistics		7	0	0	0	0	0	0	0	0	0	0	0	0	
⊳ R	MON		8	0	0	0	0	0	0	0	0	0	0	0	0	
	iggnostics		9	0	0	0	0	0	0	0	0	0	0	0	0	
<b>N</b> D	lagnostics		10	0	0	0	0	0	0	0	0	0	0	0	0	
			11	0	0	0	0	0	0	0	0	0	0	0	0	
			12	0	0	0	0	0	0	0	0	0	0	0	0	
			13	0	0	0	0	0	0	0	0	0	0	0	0	
			14	0	0	0	0	0	0	0	0	0	0	0	0	
			15	0	0	0	0	0	0	0	0	0	0	0	0	
			16	0	0	0	0	0	0	0	0	0	0	0	0	

- Are access points and other devices passing data?
- Are there errors or discards?

Neutron<sup>™</sup> Tools for Troubleshooting: Rogue AP Detection



Rogue AP	Detection
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\$	BSSID	ssid 🔶	Channel 🔶	Mode 🔶	Band 🔶	Security 🔶	Detector	\$ ≔
	00:12:0E:8E:16:8A	07FX11022879	6	11b/g	2.4GHz	WEP	Room255 (88:DC:96:25:59:BF) [RSSI:-90]	
	00:14:6C:F8:2E:4C	NETGEAR	11	11b/g	2.4GHz	WPA-PSK	Room238 (88:DC:96:25:58:48) [RSSI:-89]	
	00:15:FF:40:A9:6A	Charger	1	11b/g/n	2.4GHz	WPA2-PSK	Room226 (88:DC:96:23:37:67) [RSSI:-71]	
4	00:18:01:F6:83:0A	ZJ444	11	11b/g	2.4GHz	WEP	Room203 (88:DC:96:25:58:4B) [RSSI:-82] 2ndFIHallwayLobbyEast (88:DC:96:25:58:4E) [RSSI:-89]	
	00:1E:2A:C4:15:60	SnoopyHome	6	11b/g/n	2.4GHz	WPA2-PSK	Room231 (88:DC:96:23:37:55) [RSSI:-89]	
	00:1E:52:79:45:90	Terens Wireless	6	11b/g/n	2.4GHz	WPA-PSK mixed	Room244-WhiteRoom (88:DC:96:25:59:C5) [RSSI:-89]	
	00:1F:90:B1:BB:5C	GC5F5	11	11b/g	2.4GHz	WEP	Room203 (88:DC:96:25:58:4B) [RSSI:-89]	
	00:1F:90:B9:B9:C0	05WQ5	6	11b/g	2.4GHz	WEP	2ndFloorCafe (88:DC:96:25:59:CE) [RSSI:-89]	
4	00:1F:90:C5:9B:74	J6ZA4	11	11b/g	2.4GHz	WEP	Room203 (88:DC:96:25:58:4B) [RSSI:-87] 2ndFlHallwayLobbyEast (88:DC:96:25:58:4E) [RSSI:-87] Room275 (88:DC:96:25:58:3C) [RSSI:-86] 2ndFloorCafe (88:DC:96:25:59:CE) [RSSI:-94]	
4	00:1F:90:CE:FA:4C	TB6C5	6	11b/g	2.4GHz	WPA-PSK mixed	Room221 (88:DC:96:23:37:5B) [RSSI:-87] Room231 (88:DC:96:23:37:55) [RSSI:-87] Room222 (88:DC:96:23:37:5E) [RSSI:-85]	

10 T 1 to 10 of 299 AP(s)

📹 Previous Next 🔈

- Detect 3<sup>rd</sup> party APs in environment
- Determine if external APs on conflicting channels and causing interference



# EnGenius®

## Neutron<sup>™</sup> Tools for Troubleshooting: Real-time Client Tracking

- SSIDs / bands / APs the clients are connected on
- How much traffic they are passing
- Client Fingerprinting: what kind of devices

Active Clients

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Client Name	Client IP 🔶	Client MAC Address <sup>♦</sup>	Client OS	AP Device Name 🔶	s sid	Band 🎈	TX Traffic(KB) <sup>♦</sup>	RX Traffic(KB) <sup>♦</sup>	RSSI(dBm) <sup>‡</sup>	≣
FingerPrint	255.255.255.255	78:4B:87:62:91:83	android-de62a643d562417b	Room 251	E Gluck Corp	2.4GHz	2	4	-71	
	255.255.255.255	F0:DB:E2:6E:67:F5		ShippingAndReceiving	E Gluck Corp	5GHz	70873	863	-71	
android-8411a2fdb754c939	192.168.1.173	C0:BD:D1:65:CE:FD	Android	Patio	E Gluck Corp	2.4GHz	120	69	-62	
NetadminsiPhone	172.16.43.70	FC:E9:98:C6:54:66	Apple iOS	Room 226	E Gluck Corp	5GHz	3691	798	-68	
Michaels-iPhone	172.16.43.69	70:3E:AC:57:77:63	Apple iOS	IsamsOffice	E Gluck Corp	2.4GHz	93	142	-66	
DMelvin-PC	172.16.43.55	5C:C5:D4:6A:6F:53	Windows 7 Vista Server 2008	GlassConferenceEast	E Gluck Corp	2.4GHz	2	12	-60	
DMelvin-PC	172.16.43.55	5C:C5:D4:6A:6F:53	Windows 7 Vista Desktop	Room 259	E Gluck Corp	2.4GHz	87	86	-47	
DMelvin-PC	172.16.43.55	5C:C5:D4:6A:6F:53	Windows 7 Vista Desktop	Room 221	E Gluck Corp	2.4GHz	1	12	-55	
DMelvin-PC	172.16.43.55	5C:C5:D4:6A:6F:53	Windows 7 Vista Desktop	ElectricalRoom	E Gluck Corp	2.4GHz	34	30	-61	
android-eded62dec4ae8140	172.16.43.40	14:B4:84:76:1A:C9	Android	AndyDiazOffice	E Gluck Corp	2.4GHz	3	9	-69	
android-c4ead1c6794edb6b	172.16.43.35	98:F1:70:7D:6B:7B	Unknown OS	Department400	E Gluck Corp	5GHz	4017	545	-56	
iPhone-4	172.16.43.33	24:A2:E1:75:5A:60	Apple iOS	2ndFlHallwayEast	E Gluck Corp	2.4GHz	51974	4353	-55	
Debbie	172.16.43.184	C8:B5:B7:83:E8:1D	Apple iOS	ShippingAndReceiving	E Gluck Corp	5GHz	145	76	-67	
android-d92618af47ab3cb7	172.16.43.182	00:08:22:D0:D9:FB	Android	Room 221	E Gluck Corp	2.4GHz	43	37	-69	



## Neutron<sup>™</sup> Tools for Troubleshooting: Historical Usage / Data Statistics by User

#### Wireless Clients

Click on the bar in the Managed APs chart to display the traffic of clients of the selected AP.



Conveyor3

Total O Rx O Tx Sort: descending





### Neutron<sup>™</sup> Tools for Troubleshooting: Viewing Access Points

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#### Managed AP(s)

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10 31 to 40 of 50 AP(s)

┥ Previous Next 🔈

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- Centralized view of all APs on the network
- Sort APs by status, model, location, MAC address, IP address, cluster, firmware, or uptime
- Customize Individual AP settings



## Neutron<sup>™</sup> Tools for Troubleshooting: Historical Usage / Data Statistics by AP

#### Access Points

Click on the bar in the Managed APs chart to display the traffic of the selected AP.





Total O Rx O Tx





## Neutron<sup>™</sup> Tools for Troubleshooting: Real Time Throughput Utilization Per AP

#### Throughput Monitoring



#### Warehouse2





# Thank you