

## Generating Traffic for VoIP Testing

**Goal:** Set up and run VoIP traffic.

In this example, LANforge-FIRE is used to set up two VoIP test calls that may be used as a basis for VoIP load testing or VoIP Gateway testing.

- **Test 1:** Directed VoIP call where a LANforge endpoint calls another LANforge endpoint.
- **Test 2:** Gateway VoIP call where two LANforge endpoints register with a VoIP Gateway so that the call from one endpoint to the other goes through the gateway. The VoIP Gateway used in this example is Asterisk.



This cookbook does not cover FXS/FXO ports (analog RJ11 lines). It is possible that those setup require special commercial gateway features.

1.

### Set up the LANforge physical connections

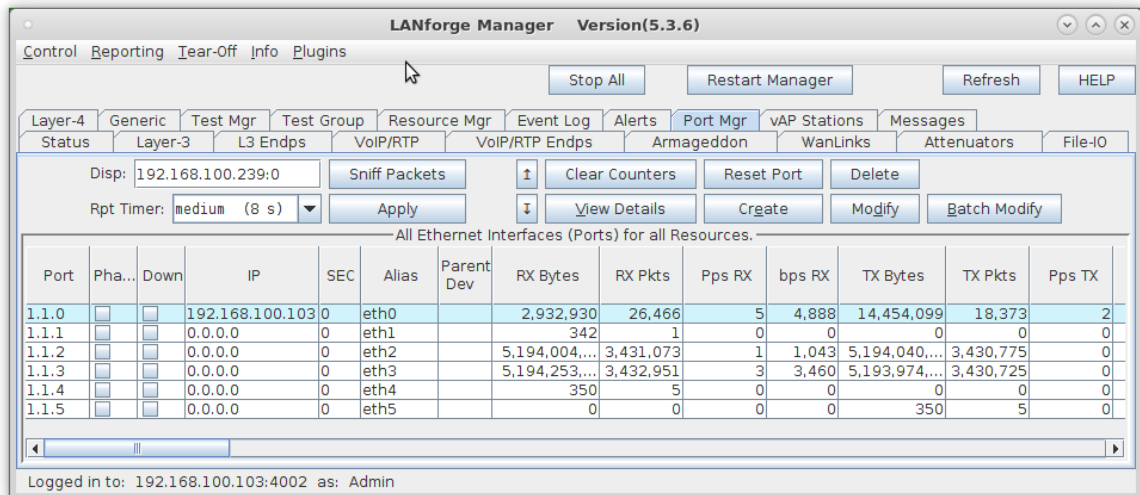
The same two ports are used for both tests. Connect eth1 and eth2 from the LANforge-FIRE system to a network switch that is also connected to the VoIP Gateway. This example assumes that your VoIP Gateway is set up properly. If you need assistance, you can contact us at [support@candelatech.com](mailto:support@candelatech.com).

2.

### Configure LANforge ports

Ports require valid IP addresses and IP masks.

A. Go to the Port Manager



LANforge Manager Version(5.3.6)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO

Disp: 192.168.100.239:0 Sniff Packets Clear Counters Reset Port Delete

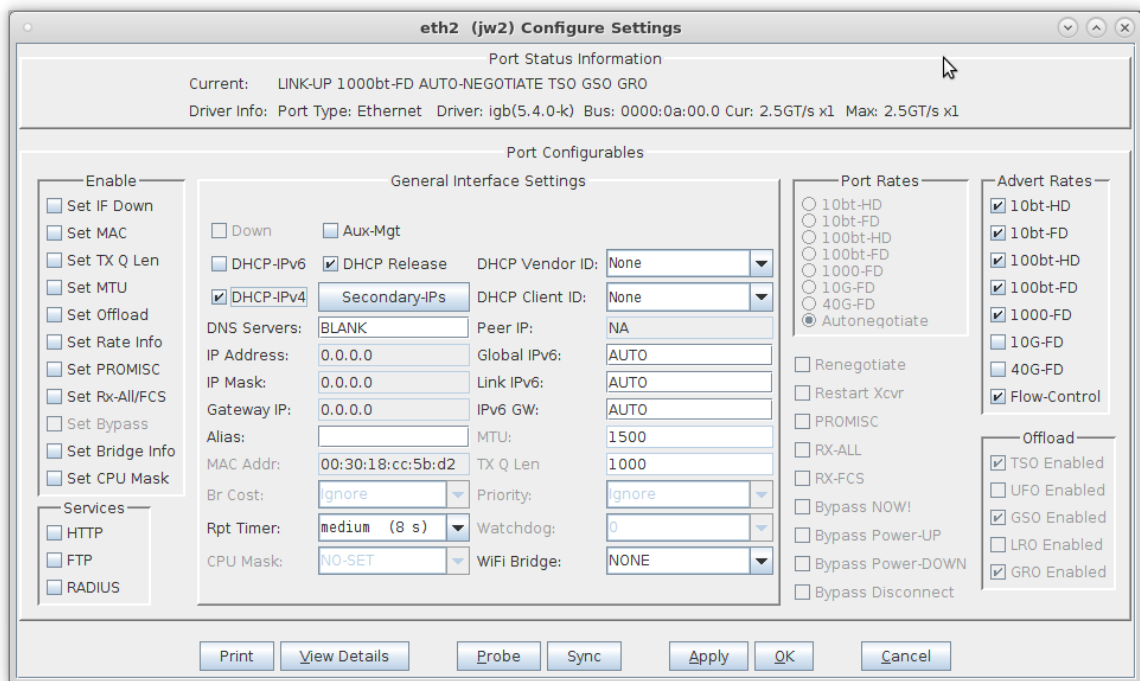
Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

Port	Pha...	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX
1.1.0			192.168.100.103	0	eth0		2,932,930	26,466	5	4,888	14,454,099	18,373	2
1.1.1			0.0.0.0	0	eth1		342	1	0	0	0	0	0
1.1.2			0.0.0.0	0	eth2		5,194,004,...	3,431,073	1	1,043	5,194,040,...	3,430,775	0
1.1.3			0.0.0.0	0	eth3		5,194,253,...	3,432,951	3	3,460	5,193,974,...	3,430,725	0
1.1.4			0.0.0.0	0	eth4		350	5	0	0	0	0	0
1.1.5			0.0.0.0	0	eth5		0	0	0	0	350	5	0

Logged in to: 192.168.100.103:4002 as: Admin

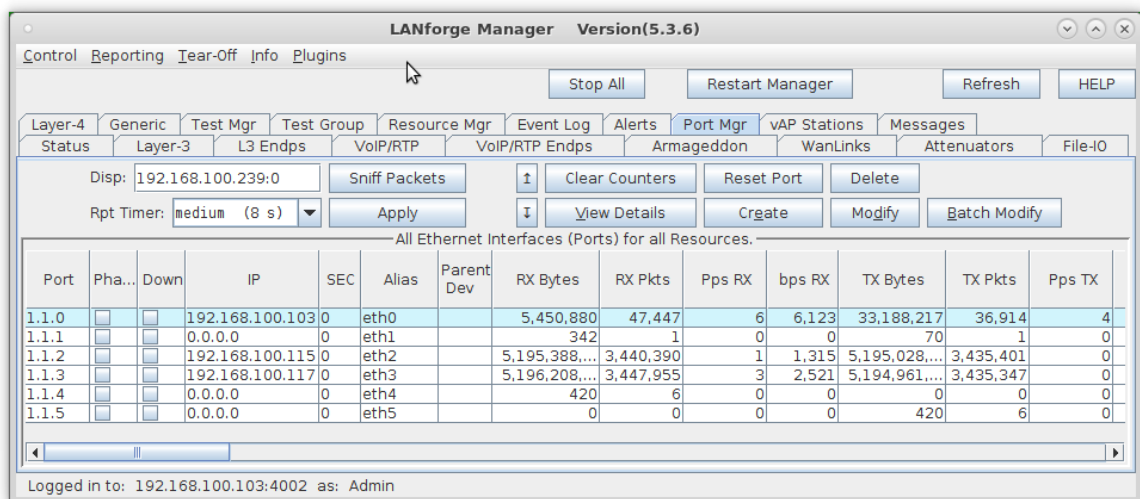
B. Modify eth2 and eth3 to set a valid network IP address and mask



The 'eth2 (jw2) Configure Settings' window displays port status and configuration options. The 'Port Status Information' section shows 'Current: LINK-UP 1000bt-FD AUTO-NEGOTIATE TSO GSO GRO' and 'Driver Info: Port Type: Ethernet Driver: igb(5.4.0-k) Bus: 0000:0a:00.0 Cur: 2.5GT/s x1 Max: 2.5GT/s x1'. The 'Port Configurables' section is divided into 'General Interface Settings' and 'Port Rates'. In 'General Interface Settings', 'DHCP-IPv4' is checked, and 'Secondary-IPs' is selected. The 'Port Rates' section shows 'Autonegotiate' selected. The 'Advert Rates' section shows '1000-FD' selected. The 'Offload' section shows 'TSO Enabled', 'GSO Enabled', 'LRO Enabled', and 'GRO Enabled' checked. The 'Services' section shows 'HTTP', 'FTP', and 'RADIUS' checked. The 'Print', 'View Details', 'Probe', 'Sync', 'Apply', 'OK', and 'Cancel' buttons are at the bottom.

A. If your network has DHCP service, you can select the 'DHCP-IPv4' checkbox so that each port is a DHCP client and will acquire its IP address from your DHCP server

C. Verify the port configuration



The 'LANforge Manager Version(5.3.6)' window shows a table of 'All Ethernet Interfaces (Ports) for all Resources.' The table has columns for Port, Ph..., Down, IP, SEC, Alias, Parent Dev, RX Bytes, RX Pkts, Pps RX, bps RX, TX Bytes, TX Pkts, and Pps TX. The data is as follows:

Port	Ph...	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX
1.1.0			192.168.100.103	0	eth0		5,450,880	47,447	6	6,123	33,188,217	36,914	4
1.1.1			0.0.0.0	0	eth1		342	1	0	0	70	1	0
1.1.2			192.168.100.115	0	eth2		5,195,388,...	3,440,390	1	1,315	5,195,028,...	3,435,401	0
1.1.3			192.168.100.117	0	eth3		5,196,208,...	3,447,955	3	2,521	5,194,961,...	3,435,347	0
1.1.4			0.0.0.0	0	eth4		420	6	0	0	0	0	0
1.1.5			0.0.0.0	0	eth5		0	0	0	0	420	6	0

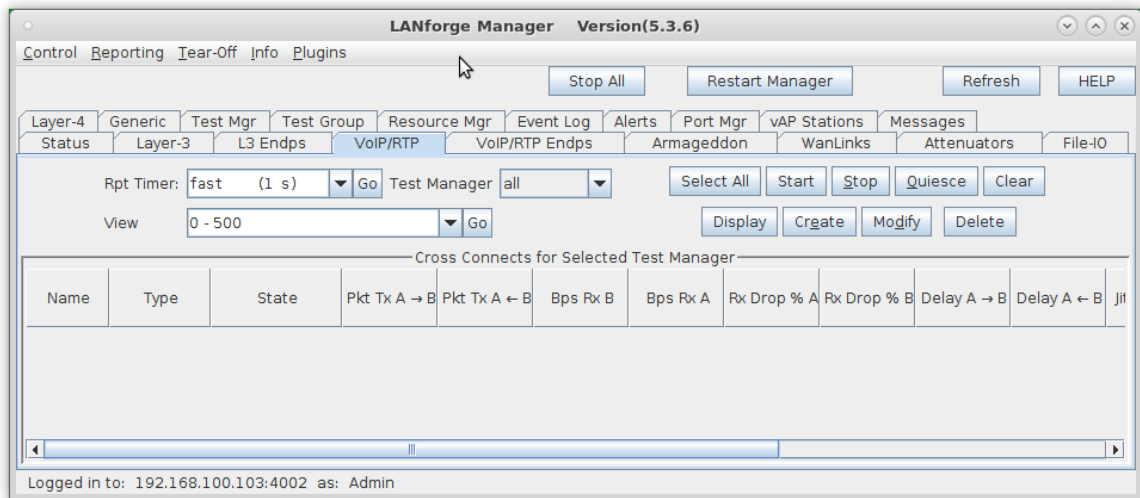
The window also includes a 'Control Reporting Tear-Off Info Plugins' menu, a 'Stop All' button, a 'Restart Manager' button, a 'Refresh' button, and a 'HELP' button. The 'Layer-4' tab is selected, and the 'Status' sub-tab is active. The 'Disp:' field shows '192.168.100.239:0' and the 'Rpt Timer:' field shows 'medium (8 s)'. The 'Sniff Packets' button is highlighted. The 'View Details', 'Create', 'Modify', and 'Batch Modify' buttons are also visible. The status bar at the bottom indicates 'Logged in to: 192.168.100.103:4002 as: Admin'.

For more information see [LANforge User's Guide: Ports \(Interfaces\)](#)

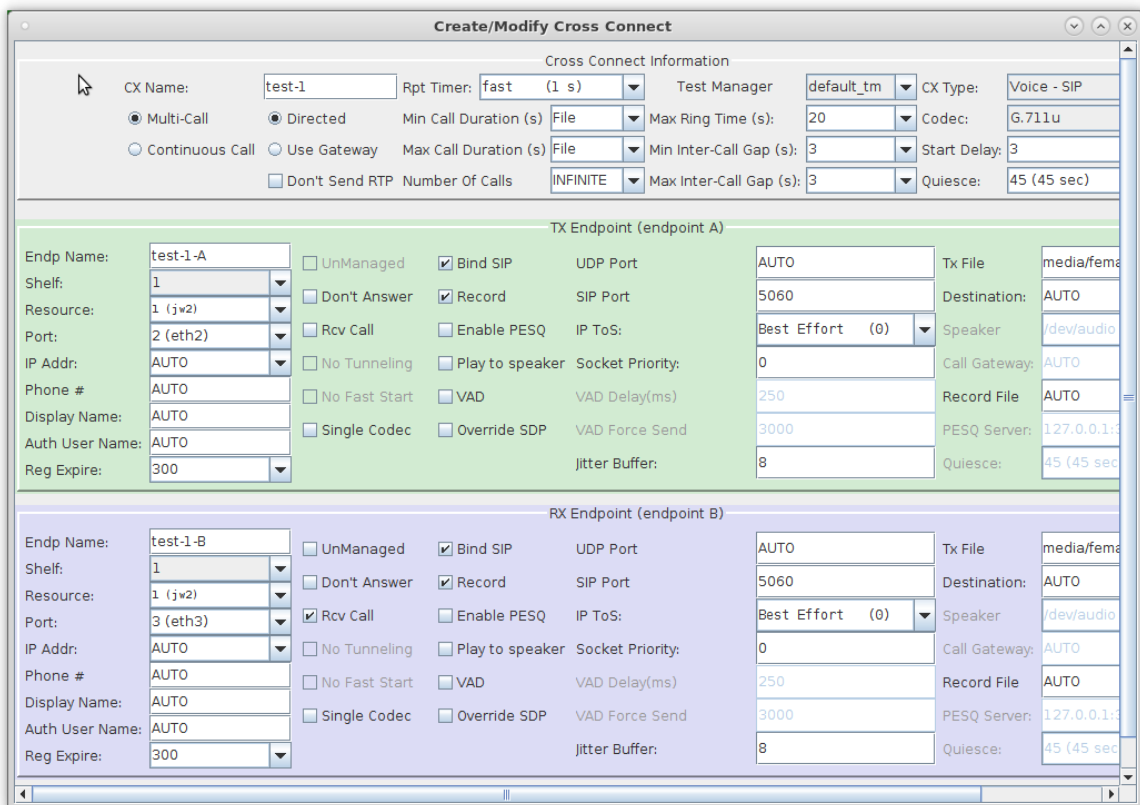
3.

## Set up Test 1, a Directed VoIP call.

A. Go to the **VoIP/RTP** tab



B. Click the **Create** button:



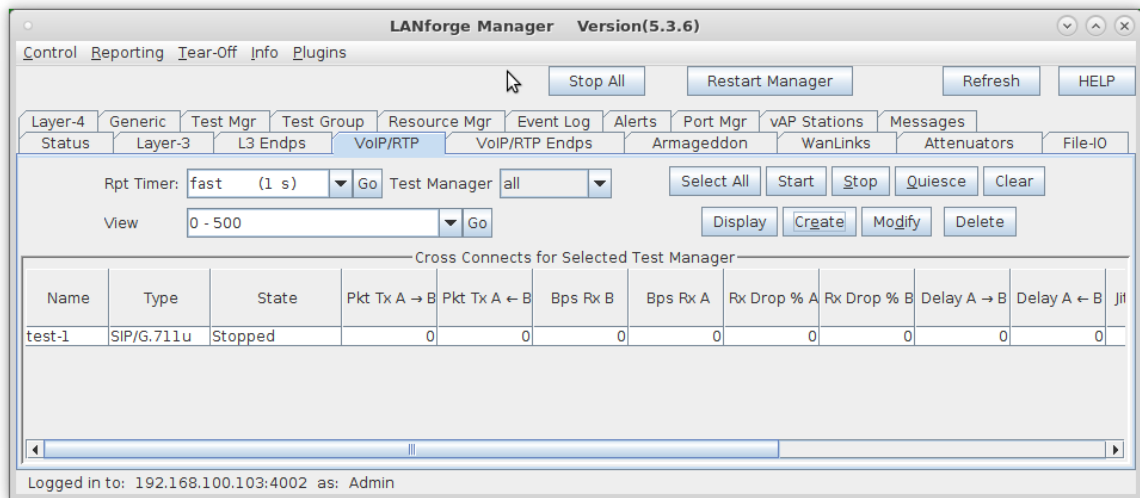
- Enter test-1 in the **CX Name** field
- Select the **Multi-Call** and **Directed** buttons
- Endpoint A is on port eth2 in this example. If you have a PESQ licensed server available, you can select Record and Enable PESQ.
- Endpoint B is on port eth3. If you are using PESQ, be sure to enter a Record File and the IP address and port of your PESQ licensed server. Be sure to select the **Rcv Call** checkbox for this endpoint to receive the call.
- Be careful of the VoIP phone number: you might have to format the number as *extension@IP-address*, E.G.:  
5678@192.168.1.10
- Click **OK** to create the VoIP Directed call

C. Verify that the test call is created

4.

## Set up Test 2, a Gateway VoIP call.

A. Go to the VoIP/RTP tab



B. Click the Create button:

**Create/Modify Cross Connect**

CX Name: test-2 Rpt Timer: fast (1 s) Test Manager: default\_tm CX Type: Voice - SIP

☒ Multi-Call ☐ Directed ☐ Continuous Call ☒ Use Gateway ☐ Don't Send RTP

Min Call Duration (s): File Max Ring Time (s): 20 Codec: G.711u

Max Call Duration (s): File Min Inter-Call Gap (s): 3 Start Delay: 3

Number Of Calls: INFINITE Max Inter-Call Gap (s): 3 Quiesce: 45 (45 sec)

**TX Endpoint (endpoint A)**

Endp Name: test-2-A Shelf: 1 Resource: 1 (brent-6port) Port: 3 (eth2) IP Addr: AUTO Phone #: 2222 Display Name: 2222 Auth User Name: AUTO Reg Expire: 300

☐ UnManaged ☒ Bind SIP ☐ Don't Answer ☐ Record ☐ Rcv Call ☐ Enable PESQ ☐ No Tunneling ☐ Play to speaker ☐ No Fast Start ☐ VAD ☐ Single Codec ☐ Override SDP

UDP Port: AUTO SIP Port: 5060 IP ToS: Best Effort (0) Socket Priority: 0 VAD Delay(ms): 250 VAD Force Send: 3000 Jitter Buffer: 8

Tx File: media/female\_voice\_8khz.wav Destination: AUTO Speaker: /dev/audio Call Gateway: pass2222@192.168.100.246:5060 Record File: AUTO PESQ Server: 127.0.0.1:3998 Quiesce: 45 (45 sec)

**RX Endpoint (endpoint B)**

Endp Name: test-2-B Shelf: 1 Resource: 1 (brent-6port) Port: 4 (eth3) IP Addr: AUTO Phone #: 3333 Display Name: 3333 Auth User Name: AUTO Reg Expire: 300

☐ UnManaged ☒ Bind SIP ☐ Don't Answer ☐ Record ☒ Rcv Call ☐ Enable PESQ ☐ No Tunneling ☐ Play to speaker ☐ No Fast Start ☐ VAD ☐ Single Codec ☐ Override SDP

UDP Port: AUTO SIP Port: 5060 IP ToS: Best Effort (0) Socket Priority: 0 VAD Delay(ms): 250 VAD Force Send: 3000 Jitter Buffer: 8

Tx File: media/female\_voice\_8khz.wav Destination: AUTO Speaker: /dev/audio Call Gateway: pass3333@192.168.100.246:5060 Record File: AUTO PESQ Server: 127.0.0.1:3998 Quiesce: 45 (45 sec)

Apply OK Refresh Batch-Create Cancel

A. Enter test-2 in the **CX Name** field

B. Select the **Multi-Call** and **Use Gateway** buttons

C. Endpoint A is on port eth2 in this example. Be sure to enter the proper username and password for the endpoint so that it can authenticate with the VoIP Gateway if necessary.

D. Configure gateway authentication:

I. To register with the gateway, often the **Auth User Name** is the phone extension (like 3333).

II. The **call gateway** begins with the extension password:  
pass3333@192.168.100.245:5060

E. Endpoint B is on port eth3. Be sure to select the **Rcv Call** checkbox for this endpoint to receive the call.

F. Click **OK** to create the VoIP Gateway call



- B. Go to the **VoIP/RTP Endps** tab to see detailed results:

LANforge Manager Version(5.0.9)

Control Reporting Tear-Off Help

Stop All Restart Manager Refresh HELP

Collision-Domains File-IO Layer-4 Generic Test Mgr Resource Mgr Serial Spans PPP-Links Port Mgr Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Audio/Visual AV Endps Armageddon WanLinks

View 0 - 400 Go Delete

All Endpoints

Name	State	Reg State	PESQ	Tx Pkts	Rx Pkts	Tx Bytes	Rx Bytes	Dropped	OOO Pkts	Dup Pkts	jB Silence	jB Under
test-1-A	In progress	Unreg	7: 4.21	13,551	13,558	2,168,1...	2,169,2...	0	0	0	0	0
test-1-B	In progress	Unreg	7: 4.21	13,561	13,551	2,169,7...	2,168,1...	0	0	0	0	0
test-2-A	Stopped	Unreg	0: 0	0	0	0	0	0	0	0	0	0
test-2-B	Stopped	Unreg	0: 0	0	0	0	0	0	0	0	0	0

Logged in to: localhost:4002 as: Admin

A. The PESQ score will be reported after the first successful call is completed and updated after each subsequent call

B. **NOTE:** Endpoints are unregistered while the call is in progress because they are not calling through the VoIP gateway

- C. Stop test-1, select test-2 and click **Start**

LANforge Manager Version(5.3.3)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-IO Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains

Rpt Timer: default (5 s) Go Test Manager all Select All Start Stop Quiesce Clear

View 0 - 200 Go Display Create Modify Delete

Cross Connects for Selected Test Manager

Name	Type	State	Pkt Tx A -> B	Pkt Tx B -> A	Bps Rx B	Bps Rx A	Rx Drop % A	Rx Drop % B	Delay A -> B	Delay B -> A	Jit
test-1	SIP/G.711u	Stopped	15,752	15,762	57,886	57,923	0.07	0	0	0	0
test-2	SIP/G.711u	In progress	1,185	1,185	56,531	56,531	0.084	0	0	0	0

Logged in to: brent-6port:4002 as: Admin

D. Go to the **VoIP/RTP Endps** tab to see detailed results:

LANforge Manager Version(5.3.3)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-IO Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators Collision-Domains

View 0 - 400 Go Clear Delete Batch Modify

All Endpoints

Calls Attempted	Calls Completed	Calls Failed	CF 404	CF 408	CF Busy	CF Cancel...	Calls Ans...	Destination Addr	Source Addr	Elapsed
0	0	0	0	0	0	0	0	2161386	4826976	348
0	0	0	0	0	0	0	0	4826976	2161386	348
4	3	0	0	0	0	0	0	9201601	9502721	114
0	3	0	0	0	0	0	0	49502721	9201601	114

Logged in to: brent-6port:4002 as: Admin

- A. PESQ remains 0:0 when it is disabled for the call in progress
- B. **NOTE:** Endpoints are registered with the VoIP gateway while the call is in progress
- C. Calls Attempted, Calls Completed and Calls Failed can be viewed by scrolling to the right on the **VoIP/RTP Endps** tab

For more information see [LANforge User's Guide: VoIP Call Generator](#)

6.

## Diagnosing Problems

- A. If your VoIP endpoint is not going on-hook, check your VoIP gateway to see if the extension is failing to register.
- B. Extensions failing to register might be missing name hostname or IP of the voice gateway they are calling.
- C. Some gateways want **Auth User Name** to include the IP or hostname, E.G. `3333@grandstream` or `3333@192.168.100.245`. Make sure any hostnames are resolvable using `nslookup $name` or `host -v $name`.
- D. Your VoIP gateway should log when extensions go on-hook, please check the gateway logs
- E. Some gateways will not accept direct extension dialing but require `extension@gateway` style dialing, E.G. the phone number that extension 2222 would call wants to look like `3333@192.168.100.245`