

Generating Traffic for DSLAM Testing

Goal: Set up and run traffic to a DSLAM system as shown in the CT570 product description.

Please refer to the diagram in the CT570 link above. In this test scenario, the LANforge-FIRE Core is one interface on a LANforge system. The LANforge-FIRE Edge is another interface on the same LANforge system. The LF Core interface is connected to the upstream DSLAM interface either directly or through a switch. The CPEs are connected to a multi-port VLAN switch which has a VLAN trunk that is connected to the LF Edge. Traffic is sent between the LF Core and the LF Edge to achieve end-to-end network traffic testing of the DSLAM system.

- 1. Connect one LANforge-FIRE interface to the DSLAM upstream internet connection. This is the LF Core part of the diagram mentioned above.
- 2. Set up the LANforge port so that it has a valid IP address and IP mask.
 - A. Go to the Port Manager

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| Control | Repo | rting 🔅 | Tear-Off In | fo <u>P</u> lu | igins | | | | | | | | | |
| | | | | | | | | Stop All | F | Restart Ma | anager | | Refresh | HELP |
| Eilo IO | | vor 4 | Conorio | Tor | t Ma | Tast | Group | Pacourco M | ar Even | | orte | ort Mar | 0000000 | |
| Status | | aver-3 | L3End | DS | VolP/ | RTP V | oIP/RTP | Endps Arr | mageddon | WanLi | inks | Attenuators | Collision | -Domains |
| D | icn: 1 | 02.160 | 100100 | | 6. | | to | Clear C | ountors | Decet | Dort | Delete | 1 | |
| | isb. [T | 92.100 | 5.100.135.0 | | 31 | IIII Packe | | clear c | ouncers | neset | PUIL | Delete | | |
| R | pt Tim | er: me | edium (8 s | s) 🔻 | | Apply | | <u>V</u> iew [| Details | Cr <u>e</u> a | te | <u>M</u> odify | Batch Mo | dify |
| | 12 | 7 | 6 | | - | All Eth | ernet In | terfaces (Por | rts) for all | Resources | s. —— | | | |
| 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 | | | 192.168.1 | 00.86 | 0 | eth5 | | 5,973,034 | 14,544 | 7 | 7,098 | 8,466,925 | 10,094 | 2 |
| 1.1.1 | | | 0.0.0.0 | | 0 | eth0 | | 627,079 | 5,032 | 3 | 3,875 | 12,300 | 85 | 0 |
| 1.1.2 | | | 0.0.0.0 | | 0 | ethl | | 0 | 0 | 0 | C | 3,114 | 33 | 0 |
| 1.1.3 | | | 0.0.0.0 | | 0 | eth2 | | 0 | 0 | 0 | 0 | 3,114 | 33 | 0 |
| 1.1.4 | | | 0.0.0.0 | | 0 | eth3 | | 0 | 0 | 0 | 0 | 3,114 | 33 | 0 |
| 1.1.5 | | | 0.0.0.0 | | 0 | etn4 | | U | U | U | U | 3,020 | 32 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | • |
| Logge | d in to | : bre | nt-6port:4 | 002 a | s: Ad | min | | | | | | | | |

B. Modify the port connected to the DSLAM. Set a valid network IP address and IP mask.

| Cur Driv | rent: LINK-UF ver Info: Port Ty | 9 1000bt-FD AUTO-NI pe: Ethernet Drive | EGOTIATE Flow-Cor r: e1000e(3.2.5-k) | ntrol TSO GSO Bus: 0000:04: | GRO 00.0 Cur | : 2.5GT/s x1 Max: 2.5GT/s x | 1 |
|-------------------------|------------------------------------|---|---|--------------------------------|-----------------|---------------------------------------|---|
| | | | Port Configur | ables | | | |
| Enable Set IF Down | | General Int | erface Settings | | | Port Rates | Advert Rate |
| Set MAC Set TX Q Len | | DHCP Belease | DHCP Vendor ID: | None | - | ○ 10bt-FD ○ 100bt-HD ○ 100bt-FD | ✓ 10bt-FD ✓ 100bt-HD |
| Set MTU | DHCP-IPv4 | Secondary-IPs | DHCP Client ID: | None | - | ○ 1000-FD ○ 10G-FD ○ 40G-FD | ✓ 100bt-FD |
| Set Rate Info | DNS Servers: IP Address: | BLANK 10.127.0.10/24 | Peer IP: Global IPv6: | NA AUTO | | | 10G-FD |
| Set Rx-All/FCS | IP Mask: Gateway IP: | 0.0.0.0 | Link IPv6: IPv6 GW: | AUTO AUTO | | Restart Xovr | Flow-Cont |
| Set Bypass | Alias: MAC Addr: | 00:90:0b:38:82:72 | MTU: TX Q Len | 1500 1000 | | RX-ALL | Offload - |
| Set CPU Mask —Services— | Br Cost: | Ignore 💌 | Priority: | Ignore | - | RX-FCS Bypass NOW! | UFO Enabl |
| HTTP FTP | Rpt Timer: CPU Mask: | medium (8 s) v NO-SET v | Watchdog: WiFi Bridge: | 0 NONE | | Bypass Power-UP | |
| RADIUS | | | | | | Bypass Disconnect | |

C. Verify the port configuration

| 4 | | | | LA | Nforge | Manager Ver | sion(5.3.3) | | | | | |
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| <u>C</u> ontrol | Reporting | <u>T</u> ear-Off <u>I</u> nfo <u>P</u> lu | igins | | | | | | | | | |
| | | | | | | Stop All | F | lestart Ma | anager | | Refresh | HELP |
| File-IO | Laver-4 | Generic Tes | t Ma | r Test (| iroup | Resource M | ar Event | | erts P | ort Mar Me | ssages | |
| Status | Layer-3 | L3 Endps | VoIP/ | RTP Vo | IP/RTP | Endps Arr | nageddon | WanLi | nks A | ttenuators | Collision | -Domains |
| Di | isp: 192.168 | 8.100.133:0.0 | Sr | niff Packe | ts | Clear C | ounters | Reset | Port | Delete | | |
| R | pt Timer: ne | edium (8 s) 🔻 | | Apply | | <u>V</u> iew [| Details | Cr <u>e</u> a | te | <u>M</u> odify | <u>B</u> atch Mo | dify |
| | | | | -All Ethe | rnet In | terfaces (Por | ts) for all I | Resources | s. — | | | |
| Port | Pha Dowr | ı IP | SEC | Alias | Parent Dev | RX Bytes | RX Pkts | Pps RX | bps RX | TX Bytes | TX Pkts | Pps TX |
| 1.1.0 | | 192.168.100.86 | 0 | eth5 | | 6,427,215 | 18,168 | 7 | 7,066 | 9,368,881 | 11,374 | 2 |
| 1.1.1 | | 0.0.0.0 | 0 | eth0 | | 874,489 | 6,926 | 3 | 3,814 | 12,660 | 89 | 0 |
| 1.1.2 | | 0.0.0.0 | 0 | ethl | | 0 | 0 | 0 | 0 | 3,114 | 33 | 0 |
| 1.1.3 | | 10.127.0.10 | 0 | eth2 | | 0 | 0 | 0 | 0 | 3,646 | 39 | 0 |
| 1.1.4 | | 0.0.0.0 | 0 | eth3 | | 0 | 0 | 0 | 0 | 3,114 | 33 | 0 |
| | | | | | | | | | | | | |
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| Logged | d in to: bre | nt-6port:4002 a | s: Ad | lmin | | | | | | | | |

For more information see LANforge User's Guide: Ports (Interfaces)

- 3. Set up virtual interfaces.
 - A. On the **Port Mgr** tab, select the port that will connect to the multi-port switch and will also be your VLAN trunk. This is the LF Edge part of the diagram.
 - B. Click the **Create** button:

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- A. Select the 802.1Q-VLAN virtual interface type
- B. The VLAN ID should correspond to your multi-port switch VLAN configuration
- C. Enter **Quantity** (number of virtual interfaces to be created)
- D. Enter the appropriate IP address and IP mask
- E. Click Apply to create the virtual interfaces
- C. Verify that the virtual interfaces are created and have the correct IP assignments

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| <u>C</u> ontrol | Repor | ting] | Tear-Off | Info Plu | ugins | 100 | | | | | | | | |
| | | | | | | | | Stop All | Re | start Man | ager | B | efresh | HELP |
| | | | | | | | | Stop All | ne | start Han | ager | | enesii | TILLI |
| File-IO | Lav | er-4 | Gene | eric Tes | st Ma | r Test Gr | | Resource Mar | Event | og Aler | ts Por | t Mar Mes | sages | |
| Status | La | ver-3 | L3I | Endps | VoIP | RTP Voll | P/RTP Er | dos Arma | aeddon | WanLink | s Atte | enuators | Collision-D | omains |
| - | | · | | | i [| | _ | · · · | | | | | | |
| D | isp: 19 | 92.168 | 3.100.13 | 33:0.0 | SI | hiff Packets | | Clear Cou | nters | Reset Po | | Delete | | |
| R | pt Time | er: me | dium | (8 s) 🔻 | | Apply | | View De | tails | Cr <u>e</u> ate | N | 1odify E | atch Modi | fy |
| | | | | | | -All Ether | net Inte | rfaces (Ports |) for all Re | esources | | | | |
| | | | 1 | | | | | | | | | | | |
| Port | Pha | Down | 1 | IP | SEC | Alias | Dev | RX Bytes | RX Pkts | Pps RX | bps RX | TX Bytes | TX Pkts | Pps TX |
| 1.1.00 | | | 192.16 | 8.100.86 | 0 | eth5 | | 7.001.107 | 22.847 | 9 | 8.787 | 10.648.118 | 13,177 | 3 |
| 1.1.01 | | | 0.0.0.0 |) | 0 | eth0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.1.02 | | | 0.0.0.0 |) | 0 | eth1 | | 0 | 0 | 0 | 0 | 3,114 | 33 | 0 |
| 1.1.03 | | | 10.127 | .0.10 | 0 | eth2 | | 0 | 0 | 0 | 0 | 3,794 | 41 | 0 |
| 1.1.04 | | | 0.0.0.0 |) | 0 | eth3 | | 0 | 0 | 0 | 0 | 8,536 | 92 | 0 |
| 1.1.05 | | | 0.0.0.0 |) | 0 | eth4 | - | 0 | 0 | 0 | 0 | 3,020 | 32 | 0 |
| 1.1.06 | | | 10.127 | .0.101 | 0 | eth3.1001 | eth3 | 0 | 0 | 0 | 0 | 1,008 | 12 | 0 |
| 1.1.07 | | | 10.127 | .0.102 | 0 | eth3.1002 | eth3 | 0 | 0 | 0 | 0 | 1,008 | 12 | 0 |
| 1.1.08 | | | 10.127 | .0.103 | 0 | eth3.1003 | eth3 | 0 | 0 | 0 | 0 | 918 | 11 | 0 |
| 1.1.09 | | | 10.127 | .0.104 | 0 | eth3.1004 | eth3 | 0 | 0 | 0 | 0 | 918 | 11 | 0 |
| 1.1.10 | | | 10.12/ | .0.105 | 0 | etn5.1005 | etns | U | U | 0 | 0 | 1,098 | 13 | |
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For more information see LANforge User's Guide: Creating & Deleting Virtual Interfaces

4. Create Layer-3 connections.

A. Go to the Layer-3 tab

| * | | LAN | forge Manager Versio | n(5.3.3) | _ • × |
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| <u>Control</u> <u>Reportin</u> | ng <u>T</u> ear-Off <u>I</u> nfo | Plugins | | | |
| | | | Stop All | Restart Manager | Refresh HELP |
| File-IO Lave | er-4 Generic | Test Mar Test Gr | oup Resource Mgr | Event Log Alerts Port M | gr Messages |
| Status Lay | er-3 L3 Endps | VoIP/RTP Vol | P/RTP Endps Arma | geddon WanLinks Attenu | ators Collision-Domains |
| Rpt Timer | r: default (5 s) | ▼ Go Test Man | ager all 🔻 | Select All Start Sto | Quiesce Clear |
| View | 0 - 200 | - | Go | Display Cr <u>e</u> ate | Modify Delete |
| | | Cross | Connects for Selecte | d Test Manager | |
| Name | Type State | Pkt Rx A Pkt R | B Bps Rx A | Bps Rx B Rx Drop % A Rx | Drop % B Drop Pkts A Drop Pkts |
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| Logged in to: | brent-6port:4002 | 2 as: Admin | | | |

B. Click the Create button

| <u>نە</u> | | | cx-01 - Create/M | Mo | dify Cross Connect | | | 6 | |
|---------------|------------------------|---|------------------|----|--------------------|---------------|---|--------------|------|
| + - All | | | | | Display Syne | Batch-Create | 1 | Apply OK Can | ncel |
| CX Name: | Cross-Connect cx-01 | | | _ | Report Timer: | Cross-Connect | | | |
| CX Type: | LANforge / UDP | | | • | | Endpoint A | | Endpoint B | |
| | Endpoint A | | Endpoint B | | Pld Pattern | increasing | - | increasing | - |
| Resource: | 1 (brent-6port) | • | 1 (brent-6port) | • | Min IP Port: | AUTO | • | AUTO | |
| Port: | 3 (eth2) | • | 6 (eth3.1001) | • | Max IP Port: | Same | • | Same | - |
| Min Tx Rate: | 5.12M | • | 1.024M | - | Min Duration: | Forever | - | Forever | |
| Max Tx Rate: | Same | • | Same | - | Max Duration: | Same | - | Same | - |
| Min PDU Size: | AUTO | • | AUTO | • | Min Reconn: | 0 (0 ms) | • | 0 (0 ms) | |
| Max PDU Size: | Same | • | Same | - | Max Reconn: | Same | - | Same | |
| IP ToS: | Best Effort (0) | • | Best Effort (0) | • | Multi-Conn: | Normal (0) | • | Normal (0) | |
| Pkts To Send: | Infinite | • | Infinite | • | | Script | | Script | |
| | | | | | | Thresholds | | Thresholds | |
| | | | | | | | | | |

A. Fill in a connection name, select a connection type and set the report timer

B. Make endpoint A the DSLAM upstream port or LF Core

C. Make endpoint B the CPE downstream port or LF Edge

- D. You can make the TX/RX rates asymmetric for the connection to simulate how the connection would be used in a real-world scenario. Here we have about 5Mbps downstream (DSLAM to CPE) and 1Mbps upstream (CPE to DSLAM).
- E. Click Apply to create the connection

C. Create multiple connections

| <u></u> | Layer-3 E | atch Creator: cx-01 | | |
|----------------------|----------------|-----------------------|---|---------|
| | | | | |
| cx-02, cx-03 cx-05 | | | | |
| Endp-A Resources: | 1, 1 1 | | | |
| Endp-B Resources: | 1, 1 1 | | | |
| Endp-A Ports: | eth2, eth2 e | eth2 | | |
| Endp-B Ports: | eth3.1002, eth | 3.1003 eth3.1005 | | |
| Endp-A IPs: | AUTO, AUTO | AUTO | | |
| Endp-B IPs: | AUTO, AUTO | AUTO | | |
| | | | | |
| Quantity: | 4 | Number of Digits: | 2 | Zero Pa |
| Starting Name Suffix | c : 01 | Name Increment: | 1 | |
| Resource Increment | A: 0 | Resource Increment B: | 0 | |
| Port Increment A: | 0 | Port Increment B: | 1 | |
| IP Addr Increment A: | 0 | IP Addr Increment B: | 0 | |
| IP-Port Increment A: | 1 | IP-Port Increment B: | 1 | |
| | | | | |

- A. Click **Batch-Create** (located in the Layer-3 connection's Create/Modify window) to create four additional connections.
- B. Set Quantity to 4, Port Increment A to 0.
- C. Click Apply.

For more information see LANforge User's Guide: Layer-3 Endpoints (FIRE)

5. Run traffic.

A. Select the connections you want to start

| \$ | | | | LANforge | Manager Versio | n(5.3.3) | | | | _ D X |
|-----------------------------|------------------|-------------|-------------|-------------|-------------------|----------------|--------------------|--------------|-------------|-----------|
| <u>Control</u> <u>Repor</u> | ting <u>T</u> ea | ar-Off Info | Plugins | | | | | | | |
| | | | | | Stop All | Restart M | anager | F | Refresh | HELP |
| | | Conorio | Toot Mar | Tact Croup | Deseures Mar | Event Log | larta Dart | Mar | 0.0000 | |
| Status La | aver-3 | L3 Endps | VolP/RTP | | P Endps Arma | geddon Wani | inks Atte | nuators | Collision-D | omains |
| | ., | | | | | Jeasen | | | | |
| Rpt Time | er: defa | ult (5 s) | ▼ Go Te | st Manager | all | Select All | Start | Stop Qui | esce Cle | ar |
| View | 0 - 2 | 00 | | ▼ Go | | Displ | ay Cr <u>e</u> ate | Modify | Delete | |
| | | | | -Cross Coni | nects for Selecte | d Test Manager | | | | |
| Name | Type | State | Pkt Bx A | Pkt Bx B | Bos Bx A | Bos Bx B | Bx Drop % A | By Drop % B | Drop Pkts A | Drop Pkts |
| | , jpc | oraro | | T ACTOR D | oporterre | BP0 IN B | in brop in n | recorep to b | bropincon | broprido |
| cx-01 | LF/UDP | Stopped | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| cx-02 | LF/UDP | Stopped | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| cx-03 | | Stopped | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| cx-04 | LF/UDP | Stopped | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
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B. Click the **Start** button

| 2 | | | | LANforge | Manager Version | n(5.3.3) | | | | -0 |
|----------------------|------------------|-------------------------|-------------|------------|--------------------|-----------------|--------------------|----------------|-------------|--------|
| ontrol <u>R</u> epor | ting <u>T</u> ea | ar-Off Info | Plugins | | | | | | | |
| | | | | | Stop All | Restart M | anager | | Refresh | HEL |
| | | | | | | | | | | |
| File-IO Lay | yer-4 | Generic | Test Mgr | Test Group | Resource Mgr | Event Log A | lerts Port | t Mgr Mes | sages | |
| Status La | ayer-3 | L3 Endps | VoIP/RTP | VoIP/RTI | P Endps Armag | geddon 🛛 WanL | inks Atte | enuators | Collision-D | omain |
| Rpt Tim | er: defa | ult <mark>(</mark> 5 s) | ▼ Go Te | st Manager | all | Select All | Start | Stop Qui | iesce Cle | ar |
| View | 0 - 2 | :00 | | ▼ Go | | Displa | ay Cr <u>e</u> ate | <u>M</u> odify | Delete | |
| | | | | -Cross Con | nects for Selecter | d Test Manager- | | | | |
| Name | Туре | State | Pkt Rx A | Pkt Rx B | Bps Rx A | Bps Rx B | Rx Drop % A | Rx Drop % B | Drop Pkts A | Drop F |
| K-01 | LF/UDP | Run | 5,132 | 25,783 | 1,023,479 | 5,115,936 | 0 | 0 | 0 | |
| -02 | LF/UDP | Run | 5,080 | 25,434 | 1,023,561 | 5,115,907 | 0 | 0 | 0 | |
| -03 | LF/UDP | Run | 5,097 | 25,521 | 1,023,467 | 5,115,842 | 0 | 0 | 0 | |
| (-04 | LF/UDP | Run | 5,115 | 25,695 | 1,023,608 | 5,115,888 | 0 | 0 | 0 | |
| x-05 | LF/UDP | Run | 5,150 | 25,520 | 1,023,637 | 5,115,729 | 0 | 0 | 0 | |
| | | | | | | | | | | |
| ogged in to | : brent- | -6port:4002 | 2 as: Admin | | |] | | | | |

For more information see LANforge User's Guide: Layer-3 Endpoints (FIRE) Candela Technologies, Inc., 2417 Main Street, Suite 201, Ferndale, WA 98248, USA www.candelatech.com | sales@candelatech.com | +1.360.380.1618