LANforge Command Line Interface (CLI) Documentation

[IMAGE: Candela Technologies Logo] [IMAGE:] sales@candelatech.com
support@candelatech.com
+1 (360) 380-1618 [PST, GMT -8]

Network Testing and Emulation Solutions Candela Technologies

- image/svg+xml Icon_home_remixofdynamitt Icon_home_remixofdynamitt
- Solutions Solutions
  - TR-398 Automated WiFi Issue 4 + mesh
  - TR-398 Automated WiFi Issue 3 + mesh
  - TR-398 Automated WiFi Issue 2 - Virtual Stations
  - Home in a Box
  - CI/CD Automated WiFi Testing
  - Large Venue WiFi
  - WiFi Mesh Testing
  - WiFi Mass Transit
  - Internet Gaming WiFi
  - WiFi Test House
  - WiFi-6e
  - WiFi-7
  - InterOp
- Products Products
  - Systems/Prices
  - WiFi Traffic Generators
  - RF Enclosures
  - Programmable Attenuators
  - Stateful Traffic Generators
  - WAN/Network Impairment
- Features Features
  - All Features
  - Network Emulation
  - Network Load Testing
  - WiFi Testing

- XORP
- VOCAL2
- Ben's Blog

- Downloads Downloads
  - Release Features
  - Quick Start Instructions
  - Current LANforge Release
  - Previous LANforge Releases

LANforge CLI User Guide

To connect to the LANforge-CLI, open a tcp socket connection to the IP address of the management interface and IP port 4001. For instance:

```
telnet localhost 4001
```

Notes about entering commands:

1. Numbers may be entered as decimal or HEX. If entering in HEX, you must prepend 0x and ensure that the next number after that is not a zero (or it will be parsed as OCTAL instead of HEX. For example, if you want to enter decimal 11, you could enter: 11 or 0xB
2. Strings consisting of a single word may be entered by themselves, but if you wish to have a multi-word string considered a single token by the parser, surround it with single quotes. Adding single quotes around a single word token is OK too, and may make scripting easier in some cases.
3. As of release 5.3.8, an time there are two single-quotes in a row, the parser will treat it as a single single quote. For previous releases, single-quoted tokens had this behaviour, but an un-quoted token would not combine two single-quotes into one. So, for 5.3.8 and higher the tokens are parsed like this:
   - 'token space' = token space
   - 'to''ken' = to'ken
   - to''ken = to'ken For 5.3.7 and lower the tokens are parsed like this:
   - 'token space' = token space
   - 'to''ken' = to'ken
   - to''ken = **to''ken**
4. Arguments are sensitive to position. You cannot just skip arguments, but you can use `NA` for most of them and have LANforge ignore them. You may leave off any trailing arguments and they will be treated the same as if they were `NA`.
5. Parameter subscripts:

   [R]
   Required for JSON calls.

   [R,a-z]
   JSON calls require value in range [a - z].

   [D:value]
   JSON interpreter provides a default value if missing.

[R][D:value]
JSON interpreter provides a default value if missing, null, None or NA.

1. adb Execute adb command on LANforge resource.
2. adb_bt Send keystrokes over bluetooth to an ADB device.
3. adb_timeout Execute adb command on LANforge resource w/ timeout (ms) for non-forked cmds
4. adb_gui Launch remote desktop over adb for Android devices.
5. add_adb Add adb device and configure its info.
6. adb_wifi_event This is used internally by LANforge to listen for WiFi events from adb.
7. rm_adb Remove an adb device
8. add_arm_endp Add an Armageddon (Kernel accelerated UDP) endpoint.
9. add_cx Add a cross-connect to a test-manager.
10. add_cd Add a Collision Domain (grouping of WanLinks).
11. add_cd_endp Add an Endpoint to a Collision Domain.
12. add_cd_vr Add a Virtual Router to a Collision Domain.
13. add_chamber Add/Modify a Chamber entry.
14. add_chamber_cx Add/Modify a Chamber connection.
15. add_chamber_path Set/Add a path to a Chamber.
16. add_dut Add/Modify a Device-Under-Test entry.
17. add_dut_ssid SSID configuration for a Device-Under-Test entry.
18. add_dut_notes Set/Add DUT notes text.
19. add_file_endp Add a File endpoint to the LANforge Manager.
20. add_gen_endp Add a Generic endpoint to the LANforge Manager.
21. add_l4_endp Add a Layer 4-7 endpoint to the LANforge Manager.
22. add_channel_group Add a grouping of DS0 channels to be used by PPP connections.
23. add_ppp_link Add a PPP interface connection.
24. add_profile Add LANforge device profile.
25. add_profile_notes Set/Add Device Profile notes text.
26. add_traffic_profile Add LANforge traffic profile.
27. add_traffic_profile_notes Set/Add Traffic Profile notes text.
28. add_text_blob Set/Add free-form text storage.
29. add_t1_span Add a T1/E1 SPAN to the LANforge Manager.
30. add_voip_endp Add a VOIP endpoint to the LANforge Manager.
31. add_vr Add or modify a Virtual Router object.
32. add_vr_bgp Add BGP configuration to a virtual router.

33. add_bgp_peer Add/Modify BGP peer configuration to a virtual router.
34. add_vrcx Add or modify a Virtual Router Connection Endpoint object.
35. add_vrcx2 Modify a Virtual Router Connection Endpoint object.
36. set_vrcx_cost Modify a Virtual Router Connection interface cost.
37. add_endp Add an endpoint to the LANforge Manager.
38. add_event Add a new event or modify an existing one.
39. add_bond Add a Linux Bond Device.
40. add_br Add a Linux Bridge Device.
41. add_mvlan Add a MAC based VLAN (Requires kernel support).
42. add_rdd Add a Redirect-Device (Requires kernel support).
43. add_gre Add a GRE Tunnel device.
44. add_sec_ip Add or update secondary IP Address(es).
45. add_vlan Add an 802.1Q VLAN (Requires kernel support).
46. add_venue Add/modify a Venue.
47. add_sta Add/modify a WIFI Virtual Station (Virtual STA) interface.
48. add_vap Add/modify a WIFI Virtual Access Point (VAP) interface.
49. add_monitor Add/modify a WIFI Montior interface.
50. add_tm Create and add a new test manager to the system.
51. add_group Create a new test group.
52. add_tgcx Adds CX to test group.
53. add_wl_endp Add a WanLink (ICE) endpoint to the LANforge Manager.
54. add_wanpath Add a WanPath (ICE) personality to a WanLink.
55. admin Various admin commands.
56. apply_vr_cfg Apply all of the virtual routing settings for this Resource.
57. cancel_vr_cfg Cancel a virtual-router configuration process for this Resource.
58. clear_cx_counters Clear counters for one or all cross-connects.

```
PORTS_TOO  | 0x01    # Clear port counters this CX uses as well.
SEND_EVENT | 0x02    # Send event when clearing counters.
```

59. clear_endp_counters Clear counters for one or all endpoints.
60. clear_cd_counters Clear counters for one or all Collision Domains.
61. clear_group Clears all cross-connects in a test group.
62. clear_port_counters Clear one or all port counters or other items.
63. clear_resource_counters Clear counters on one or all resources.
64. clear_wifi_profiles Clear wifi profile from device in question.
65. clear_wp_counters Clear WanPath counters for one endpoint.
66. discover Force discovery of nodes on the management network.

67. diag Get diagnostic information from the LANforge server.
68. notify_dhcp Handle input from the DHCP client process.
69. do_pesq Start a PESQ calculation.
70. file Transfer files through LANforge API.
71. gossip Send a message to everyone else logged in to the server.
72. getintxrate Get tx packets per second rate over the last 3 seconds.
73. getinrxrate Get rx packets per second rate over the last 3 seconds.
74. getinrxbps Get rx bits-per-second per second rate over the last 3 seconds.
75. gettxpkts Get the total tx packets sent.
76. getrxpkts Get the total rx packets sent.
77. getpktdrops Get the total packets dropped (based on sequence number gaps).
78. getavglatency Get the average latency for an endpoint.
79. getrxporterrpkts Get the total error packets detected on the receiving port (interface)
80. getrxendperrpkts Get the total error packets detected on the endpoint.
81. getipadd Get the IP for an endpoint.
82. getmask Get the IP Mask for an endpoint.
83. getmac Get the MAC address for an endpoint.
84. ? Show help for command(s).
85. init_wiser Initialize the Wiser NCW/HNW module.
86. ios For IPC - SwiftUI sending information to BTSERVER
87. licenses Print out license information. See also: set_license
88. load Load a previously saved test database.
89. login Login as the client name you enter.
90. create_client Create a new client.
91. log_capture Save logs to a specified location.
92. log_level Query or modify the logging level.
93. log_msg Send an message to the LANforge log file.
94. motd Get the message of the day (alerts, etc)
95. nc_show_endpoints Non-Cached Show one or all endpoints.
96. nc_show_pesq Non-Cached Show PESQ results for one or all VOIP endpoints.
97. nc_show_ports Show one/all ports for one/all resources in one/all shelves. No caching.
98. c_show_ports Show one/all ports for one/all resources in one/all shelves. Always uses cache.
99. nc_show_channel_groups Show one/all ChannelGroups for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. Will always request the absolute latest information from the remote system(s)

100. nc_show_spans Show one/all Spans for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. Will always request the absolute latest information from the remote system(s)
101. nc_show_vr Show one/all Virtual Routers for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. This command will always request the absolute latest information from the remote system(s)
102. nc_show_vrcx Show one/all Virtual Router Connections for one/all resources in one/all shelves. Only Connections on the 'free-list', those not associated with any Virtual Router will be shown with this command unless you exactly specify the VRCX Name. If the VRCX is in a virtual router, only cached results will be shown. Connections associated with routers will be shown whith the 'show_vr' command with the rest of the router information. This command will always request the absolute latest information from the remote system(s)
103. nc_show_cd Show one/all Collision Domains.
104. nc_show_ppp_links Show one/all PPP Links for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.
105. probe_port Probe and report low-level details for a port.
106. probe_ports Check for the existence of new (virtual) interfaces.
107. port_reset_completed Internal command used by port-reset script to notify LANforge the reset has completed. This is only valid for Resource processes.
108. exit Log out of the LANforge control server.
109. report Configure server-side reporting.
110. reset_port Reset an Ethernet port or ports.
111. reset_serial_span Reset a serial span.
112. reboot_os Restart the OS on a remote resource.
113. rm_attenuator Remove attenuator configuration.
114. rm_chamber Remove Chamber configuration.
115. rm_chamber_path Remove a chamber path.
116. rm_dut Remove DUT configuration.
117. rm_rfgen Requests removal of rf-generator configuration.
118. rm_cd Remove a Collision Domain.
119. rm_cd_endp Remove an Endpoint from a Collision Domain.
120. rm_cd_vr Remove a Virtual Router from a Collision Domain.
121. rm_endp Remove one or all endpoints.
122. rm_channel_group Remove a channel group, or set of groups.
123. rm_event Remove one or more events from the event log.
124. rm_group Deletes a new test group.
125. rm_profile Remove Device Profile configuration.
126. rm_text_blob Remove Text Blob.
127. rm_traffic_profile Remove Traffic Profile configuration.

128. rm_threshold Remove existing threshold-alert for a particular entity.
129. rm_tgcx Removes CX from test group.
130. rm_venue Remove a venue.
131. rm_vr Remove one or all Virtual Routers.
132. rm_vrcx Remove one or all Virtual Router Connections on the free-list. Underlying objects will be deleted if they were auto-created to begin with unless you specify the last argument as 'vrcx_only'.
133. rm_span Remove a Serial Span (T1, etc), or a set of spans.
134. rm_ppp_link Remove a PppLink.
135. rm_client Delete a stored client profile.
136. rm_cx Delete a cross-connect from the system.
137. rm_wanpath Remove one or all wanpaths from an endpoint.
138. rm_db Delete a database.
139. rm_resource Remove a phantom Resource and all of its config.
140. rm_sec_ip Remove secondary IP Address(es).
141. rm_vlan Remove a virtual interface.
142. rm_test_mgr Remove a single test manager.
143. save Save the current configuration to a file, to be loaded later.
144. scan_wifi Scan for WiFi access points.
145. set_arm_info Set Armageddon Endpoint configuration.
146. set_attenuator Set attenuation value on specified attenuator module.
147. set_rfgen Set RF Noise-generator (RADAR) config.
148. blink_attenuator Visually identify attenuator by blinking LEDs or changing LCD colors or similar.
149. flash_attenuator Upload new software image to specified attenuator.
150. set_chamber Set configuration for chambers with turntables.
151. set_cx_report_timer Set time between reports from Test-Manager(s) to client(s).
152. set_endp_proxy Set the proxy information for L3 endpoints.
153. set_endp_report_timer Set the report timer for and endpoint.
154. set_cx_state Set the state of the Cross-Connect(s).
155. set_l4_endp Set some extra layer-4 endpoint configuration
156. set_license Install license keys on the manager machine.
157. set_password Set the password for the current or another client.
158. set_ppp_link_state Set the state of the PPP Link(s).
159. set_resource Set the Resource configuration.
160. set_script Add or modify a script for a particular entity.
161. set_test_id Set the test ID on specified resource(s).

162. rpt_script Internal command, see set_script, syntax is same.
163. add_threshold Add or modify a threshold-alert for a particular entity.
164. set_wifi_radio Modify a WIFI Radio interface.
165. set_wifi_extra Configure advanced wifi settings.
166. set_wifi_extra2 Configure more advanced wifi settings.
167. set_wifi_txo Configure wifi TX rate control overrides.
168. set_wifi_corruptions Configure corruptions for wifi devices.
169. set_wifi_custom Set/Add custom hostapd or wpa_supplicant config file contents.
170. set_ifup_script Set the post-ifup-script for a port.
171. set_endp_addr Set the MAC, IP, and Port addresses for an UN_MANAGED endpoint.
172. set_endp_payload Payload type and payload for an endpoint.
173. set_endp_details Modify low-level settings such as TCP window sizes.
174. set_event_interest Set event interest.
175. set_event_priority Set event priority.
176. set_mc_endp Set multicast-specific info for multicast endpoints.
177. show_adb Show ADB devices
178. show_chamber Show Chamber object
179. show_dut Show Devices Under Test (DUT)
180. show_events Show recent events.
181. show_alerts Show active Alerts.
182. show_event_interest Display Event settings.
183. show_err Send an error message to everyone else logged in to the server.
184. start_endp Start an endpoint.
185. show_profile Show Device Profiles
186. show_text_blob Show Text Blob
187. show_traffic_profile Show Traffic Profiles
188. start_group Starts all cross-connects in a test group.
189. start_ppp_link Start a PppLink.
190. stop_endp Stop an endpoint.
191. quiesce_endp Quiesce an endpoint.
192. stop_group Stops all cross-connects in a test group.
193. quiesce_group Quiesces all cross-connects in a test group.
194. stop_ppp_link Stop a PppLink.
195. set_endp_tos Type of Service metrics for transmitted packets from this endpoint.
196. set_endp_quiesce Set the quiesce timer, in seconds.

197. set_endp_pld_bounds Set the min/max payload size bounds for an endpoint.
198. set_endp_tx_bounds Set the min/max transmit rate bounds for an endpoint.
199. set_fe_info Set read/write size and file information for File Endpoints.
200. set_gen_cmd Set command to be executed for this generic endpoint.
201. set_endp_flag Set a flag to modify some Endpoint option.
202. set_flag Set a flag to modify some client option.
203. set_gps_info Set information that could be obtained from a GPS device.
204. set_poll_mode Set mode to polling or push algorithm.
205. set_port Configure the attributes on an Ethernet port.
206. set_port2 Set additional port configuration for existing port.
207. set_port_alias Set the alias for a virtual interface specified by MAC or 802.1Q VLAN-ID.
208. set_sec_ip Set new list of secondary IP Address(es).
209. set_voip_info Set various VOIP endpoint related values.
210. set_wanpath_filter Set the Filter type for the WanPath
211. set_wanpath_running Set the Running state of the WanPath
212. set_wanpath_corruption Set corruption values on a WanLink.
213. set_wanlink_info Set various WAN-Link Endpoint data members.
214. set_wanlink_pcap Set the WanLink packet capture information.
215. set_wl_corruption Set corruption values on a WanLink.
216. set_wl_qdisc Set the Queuing Discipline for a WanLink.
217. set_endp_file Set the file name for a particular endpoint. Used for packet playback.
218. show_attenuators Show Attenuator information.
219. show_rfgen Show RF-Generators configured and/or discovered.
220. show_resources Show one or all resources for one or all shelves.
221. show_clients Show all unique clients that have registered in the past.
222. show_cx Show one or all cross-connects for one or all test managers.
223. show_cxe Show one or all cross-connects and their endpoints.
224. show_cd Show one/all Collision Domains.
225. show_rt Show Virtual Router's routing table.
226. show_vr Show Virtual Routers for one/all resources
227. show_vrcx Show Virtual Router connections for all resources
228. show_dbs Show all available databases that may be loaded.
229. show_endpoints Show one or all endpoints.
230. show_script_results Show results of last script run for one or all endpoints.
231. show_pesq Show PESQ results for one or all VOIP endpoints.

232. show_endp_payload Show the payloads for one or all endpoints.
233. show_files Show files in a particular directory.
234. show_ports Show one/all ports for one/all resources in one/all shelves.
235. show_channel_groups Show one/all ChannelGroups for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.
236. show_spans Show one/all Spans for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.
237. show_ppp_links Show one/all PPP Links for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.
238. show_tm Show one or all test managers.
239. show_group Show one or all Test Groups.
240. show_venue Show one or more venues.
241. show_wps Show one or all WanPaths for one or all WanLink Endpoints.
242. shutdown Restart the LANforge manager process.
243. shutdown_resource Restart all LANforge processes on a remote resource.
244. shutdown_os Shutdown the OS on a remote resource.
245. sniff_port Launch Wireshark on a traffic generator port.
246. tail Stream the content of a file.
247. tm_register Register interest in one or all test managers.
248. tm_unregister Un-register interest in one or all test managers.
249. version Print out the version of the LANforge server.
250. wiser_reset Reset WISER library on the specified machine.
251. who Show who is currently logged into the system.
252. wifi_event This is used internally by LANforge to listen for WiFi events.
253. wifi_cli_cmd Pass command to wpa_cli or hostapd_cli process for the specified station or AP.
254. xorpsh Connect to a Virtual Router's xorpsh shell or send cmds to the xorpsh.

1. adb

   adb is used to control Android devices connected to LANforge systems via USB and/or IP network.

   Related Commands

   `async_feedback` | `%{key}`

Argument	Description
shelf	Shelf name/id. Required. [R][D:1]
resource	Resource number. [W]

adb_id	Android device identifier, use NA if it should not be used/specified. [W]
key	Key to be used in response messages, NA for generic keyed message. Key should not have - or spaces or other non-alphanumeric characters in it.
adb_cmd	All remaining text after adb_id will be sent to the adb command. `Unescaped Value`

Syntax: adb shelf resource adb_id key adb_cmd

2. adb_bt

   bluetooth keyboard emulation is used to control ADB devices connected to LANforge systems via USB.

   Related Commands

   `async_feedback | %{key}`

Argument	Description
shelf	Shelf name/id. Required. [R][D:1]
resource	Resource number. [W]
adb_id	Android device identifier, use NA if it should not be used/specified. [W]
keystrokes	All remaining text after adb_bt will be sent as key-strokes. For example: [... {adb_id} ctrl h ctrl f s e t t...] `Unescaped Value`

Syntax: adb_bt shelf resource adb_id keystrokes

3. adb_timeout

   adb is used to control Android devices connected to LANforge systems via USB and/or IP network.

   Related Commands

   `async_feedback | %{key}`

Argument	Description
shelf	Shelf name/id. Required. [R][D:1]
resource	Resource number. [W]

adb_id	Android device identifier, use NA if it should not be used/specified. [W]
key	Key to be used in response messages, NA for generic keyed message. Key should not have - or spaces or other non-alphanumeric characters in it.
max_dur	Num of milliseconds to let this command run before killing it. 0 indicates no time-out.
adb_cmd	All remaining text after adb_id will be sent to the adb command. `Unescaped Value`

Syntax: adb_timeout shelf resource adb_id key max_dur adb_cmd

4. adb_gui

   Utilize the MonkeyRemote or scrcpy project to provide an interactive UI for Android devices via the adb protocol. If you do not specify the `DISPLAY`, LANforge will attempt to guess it based on your connecting IP address.

   For PCs, you can use the exceed program from Hummingbird software.

   To enable X access on Unix/Linux, run this command:

   ```
   xhost +
   ```

   This can open your machine to security threats, so read up on `xhost` before you run this command on a mission critical machine not protected by a good firewall!

   If using scrcpy, screen-size can be > 1.0. 1.0 means '800' screen width. If using MonkeyRemote, then value is percentage of default size.

   Flags are defined as follows. You can enter the value in HEX if you prefix it with `0x`.

   ```
   USE_SCRCPY              | 0x1   # Use scrcpy instead of MonkeyRemote
   NO_AUDIO_SCRCPY         | 0x2   # Disable scrcpy audio forwarding
   OMX_H264_ENCODER_SCRCPY | 0x4   # Use non-default OMX.google.h264.encoder scrcpy
   ```

Argument	Description
shelf	Shelf name/id. Required. [R][D:1]
resource	Resource number. [W]
adb_id	Android device identifier.
display	The DISPLAY option, for example: 192.168.1.5:0.0. Will guess if left blank.
screen_size_prcnt	0.1 to 1.0, screen size percentage for the Android display.

flags	See flags defined above.
max_size	Limit both the width and height of the video to value. (scrcpy only). 0 is default.

Syntax: adb_gui shelf resource adb_id display screen_size_prcnt flags max_size

5. add_adb

   Add adb device and configure its settings. ADB Device will be phantom until it is discovered by the LANforge resource.

Argument	Description
shelf	Shelf name/id. Required. [R][D:1]
resource	Resource number. [W]
adb_id	Android device identifier (serial number).
adb_product	Android device product ID
adb_model	Android device model ID
adb_device	Android device device ID
lf_username	LANforge Interop app username
sdk_version	Android sdk version (example: 19)
sdk_release	Android sdk release (example: 4.4.2)
app_identifier	Identifier that App and adb can both query (mac of wlan0)
device_type	Interop device type
bt_ctrl_dev	Filepath of device's assigned BT adapter

Syntax: add_adb shelf resource adb_id adb_product adb_model adb_device lf_username sdk_version sdk_release app_identifier device_type bt_ctrl_dev

6. adb_wifi_event

   This is used internally by LANforge to listen for WiFi events from adb.

Argument	Description
device	ADB device name. [R]
event	What happened. [R]
status	Status on what happened.
msg	Entire event in human readable form.
status2	Status on what happened.

Syntax: adb_wifi_event device event status msg status2

7. rm_adb

Remove an adb device. ADB Device must be phantom to be removed.

Argument	Description
shelf	Shelf name/id. Required. [R][D:1]
resource	Resource number. [W]
adb_id	Android device identifier (serial number).

Syntax: rm_adb shelf resource adb_id

8. add_arm_endp

   Add an Armageddon endpoint. Armageddon endpoints are kernel accelerated, and often run many times faster than regular LANforge endpoints, especially for smaller packets. The feature set is optimized for quickly generating lots of packets from different source and destination addresses (mac, IP, ip-port, etc).

   Related Commands

`postexec_cli`	`nc_show_endp %{alias}`
`preexec_method`	`baseCheckPortExists`

Argument	Description
alias	Name of endpoint. [R]
shelf	Shelf name/id. Required.[D:1]
resource	Resource number.
port	Port number or name.
type	Endpoint Type : arm_udp.
pps	Packets per second to generate.
pkt_sz	Minimum packet size, including all Ethernet headers.
mx_pkt_sz	Maximum packet size, including all Ethernet headers.
cpu_id	Preferred CPU ID on which this endpoint should run.
tos	The Type of Service, can be HEX. See set_endp_tos for details.

   Syntax: add_arm_endp alias shelf resource port type pps pkt_sz mx_pkt_sz cpu_id tos

9. add_cx

   Add a cross-connect to a test-manager. The endpoints must have already been created.

Related Commands

```
postexec_cli        | show_cx %{test_mgr} %{alias}
```

Argument	Description
alias	Name of the Cross Connect to create. [R]
test_mgr	Name of test-manager to create the CX on. [W][D:default_tm]
tx_endp	Name of Transmitting endpoint. [R]
rx_endp	Name of Receiving endpoint. [W]

Syntax: add_cx alias test_mgr tx_endp rx_endp

10. add_cd

    Add a Collision Domain (CD). A CD is a group of WanLinks and/or Virtual-Routers that are considered to be in the same collision domain. For instance, when emulating clients talking to an AP, all of the WanLinks associated with this emulated AP should be in the same Collision Domain.

    All WanLinks or Virtual Routers in a CD must be on the same Resource (machine). Currently only the 'WIFI' type is supported unless you have the third-party WISER module loaded (contact your sales rep for info.)

    The WIFI emulation counts bandwidth when it is transmitted or received (ie, it emulates stations ↔ AP behaviour.) The WISER emulation emulates special military waveforms. An Ethernet Hub emulation is planned for future releases.

    Flags are defined as follows. The `state` field over-rides the `running` flag if state is not `NA`. You can enter the value in HEX if you prefix it with `0x`.

    ```
    RUNNING    | 0x1    # Set to running state.
    ERR        | 0x2    # Set to kernel mode.
    ```

Argument	Description
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]
alias	Name of Collision Domain. [W]
type	CD Type: WIFI, WISER_SURFACE, WISER_SURFACE_AIR, WISER_AIR_AIR, WISER_NCW
bps	Maximum speed at which this collision domain can run.
report_timer	How often to report stats.

state	RUNNING or STOPPED (default is RUNNING). Use this to start/stop.
flags	See above. Leave blank or use 'NA' for no default values.

Syntax: add_cd shelf resource alias type bps report_timer state flags

11. add_cd_endp

    Add an Endpoint to a Collision Domain. The endpoint must be a WanLink Endpoint. If the endpoint is currently in another Collision Domain, it will be migrated to the new one safely.

Argument	Description
cd	Name of Collision Domain. [R]
endp	Endpoint name/id. [R]

Syntax: add_cd_endp cd endp

12. add_cd_vr

    Add a Virtual Router to a Collision Domain. If the VR is currently in another Collision Domain, it will be migrated to the new one safely.

Argument	Description
cd	Name of Collision Domain. [R]
vr	Virtual-Router name/ID. [R]

Syntax: add_cd_vr cd vr

13. add_chamber

    Add/Modify a Chamber entry. A chamber may have up to 4 LANforge resources and up to 4 DUTs. It may also have up to 16 RF Connections defined, including Connections with attenuation configured.

    chamber_flags:

```
PHANTOM      | 0x1     # (1) Chamber is not actually here right now.
VIRTUAL      | 0x2     # (2) No real chamber, open-air grouping of equipment.
OPEN         | 0x4     # (3) Door is open, no real isolation right now.
```

    Chamber Type:

```
UNKNOWN   | 0
MEDIUM    | 1
LARGE     | 2
2D-LARGE  | 3
```

    Turntable Type:

```
CT850A    | 0  # TCP-IP Connected turntable in CT850A 2D chamber.
COMXIM    | 1  # ComXim stand-alone USB connected turn-table.
CT840A    | 2  # Modbus API turntable in CT840A 2D chamber.
```

The resource-id only needs to be set in case there is a serial connection to the chamber turntable or other management control device. For TCP-IP connections, the manager process can connect directly. See **add_chamber_cx** to configure connection objects.

Argument	Description
name	Name of Chamber, unique identifier. [R]
flags	Flag field for Chamber, see above.
isolation	Estimated isolation in db for this chamber.
chamber_type	Chamber type, see above. Use 1 for Medium if uncertain.
dut_name1	Name of first DUT in this chamber or NA
dut_name2	Name of second DUT in this chamber or NA
dut_name3	Name of third DUT in this chamber or NA
dut_name4	Name of fourth DUT in this chamber or NA
lanforge1	EID of first LANforge Resource in this chamber or NA
lanforge2	EID of second LANforge Resource in this chamber or NA
lanforge3	EID of third LANforge Resource in this chamber or NA
lanforge4	EID of fourth LANforge Resource in this chamber or NA
flags_mask	Mask of what flags to pay attention to, or NA for all.
X	X coordinate to be used when drawn in the LANforge-GUI.
Y	Y coordinate to be used when drawn in the LANforge-GUI.
width	Width to be used when drawn in the LANforge-GUI.
height	Height to be used when drawn in the LANforge-GUI.
resource	LANforge Resource ID for controlling turn-table via serial protocol.
turntable_type	Turn-Table type: see above.
sma_count	Number of SMA connectors on this chamber, default is 16.

Syntax: add_chamber name flags isolation chamber_type dut_name1 dut_name2 dut_name3 dut_name4 lanforge1 lanforge2 lanforge3 lanforge4 flags_mask X Y width height resource turntable_type sma_count

14. add_chamber_cx

    Add/Modify a Chamber connection. A chamber may have up to 32 connections defined.

    chamber_cx_flags:

```
CONNECTED     | 0x1      # (1) Connected to something.  If flag is not set, connec
TERMINATED    | 0x2      # (2) Connection is terminated, signal shall not pass!
```

Argument	Description
name	Name of Chamber, unique identifier. [R]
connection_idx	Connection index, currently up to 32 connections supported (0-31) [R]
internal	Internal (1) or not (0): Internal connections are no longer supported.
flags	Flag field for Chamber Connection, see above.
a_id	EidAntenna in string format for A side connection.
b_id	EidAntenna in string format for B side connection.
atten_id	EID for the Attenuator module if one is inline on this connection.
flags_mask	Mask of what flags to pay attention to, or NA for all.
min_atten	Specify minimum attenuation in 10ths of a db. Distance logic will not set atten below this.
zrssi2	Specify 2.4Ghz zero-attenuation RSSI in 10ths of a db. Distance logic will consider this in its calculations.
zrssi5	Specify 5Ghz zero-attenuation RSSI in 10ths of a db. Distance logic will consider this in its calculations.

    Syntax: add_chamber_cx name connection_idx internal flags a_id b_id atten_id flags_mask min_atten zrssi2 zrssi5

15. add_chamber_path

    This text (x,y,ticks triples) will be added to the end of the specified path. The text must be entered one line at a time, primarily due to CLI parsing limitations. X and Y are coordinates, with 0,0 being top-left. Ticks are units of time that the chamber object should stay in the specified location before moving to the next waypoint. When re-playing a path, the ticks will be converted into units of time based on the specified replay speed. Setting the path content to

[BLANK] will delete it. You can also use the 'rm_chamber_path' command to delete one or all paths.

Argument	Description
chamber	Chamber Name. [R]
path	Path Name [R]
content	`[BLANK]` will erase all content, any other text will be appended to existing text. `Unescaped Value`

Syntax: add_chamber_path chamber path content

16. add_dut

Add/Modify a Device-Under-Test (DUT) entry. The DUT is primarily informational and used to help customize reports and automate high-level test cases.

dut_flags:

```
STA_MODE       | 0x1     # (1) DUT acts as Station.
AP_MODE        | 0x2     # (2) DUT acts as AP.
INACTIVE       | 0x4     # (3) Ignore this in ChamberView, etc
WEP            | 0x8     # Use WEP encryption on all ssids, deprecated, see add_c
WPA            | 0x10    # Use WPA encryption on all ssids, deprecated, see add_c
WPA2           | 0x20    # Use WPA2 encryption on all ssids, deprecated, see add_
DHCPD-LAN      | 0x40    # Provides DHCP server on LAN port
DHCPD-WAN      | 0x80    # Provides DHCP server on WAN port
WPA3           | 0x100   # Use WPA3 encryption on all ssids, deprecated, see add_
11r            | 0x200   # Use .11r connection logic on all ssids, deprecated, se
EAP-TTLS       | 0x400   # Use EAP-TTLS connection logic on all ssids, deprecated
EAP-PEAP       | 0x800   # Use EAP-PEAP connection logic on all ssids, deprecated
NOT-DHCPCD     | 0x1000  # Station/edge device that is NOT using DHCP.
                         # Otherwise, automation logic assumes it is using dhcp c
```

Argument	Description
name	Name of DUT, cannot contain '.' [R]
flags	Flag field for DUT, see above.
img_file	File-Name for image to represent DUT.
sw_version	DUT Software Version information
hw_version	DUT Hardware Version information
model_num	DUT Model information
serial_num	DUT Identifier (serial-number, etc)

serial_port	Resource and Serial port name on LANforge that connects to DUT (1.2.ttyS0). Serial port does not need to be on resource holding wan_port or lan_port
wan_port	IP/Mask for WAN port
lan_port	IP/Mask for LAN port
ssid1	WiFi SSID that can be used to connect to DUT
passwd1	WiFi Password that can be used to connect to DUT
ssid2	WiFi SSID that can be used to connect to DUT
passwd2	WiFi Password that can be used to connect to DUT
ssid3	WiFi SSID that can be used to connect to DUT
passwd3	WiFi Password that can be used to connect to DUT
mgt_ip	Management IP Address to access DUT
api_id	DUT API Identifier (none specified yet)
flags_mask	Optional mask to specify what DUT flags are being set.
antenna_count1	Antenna count for first radio.
antenna_count2	Antenna count for second radio.
antenna_count3	Antenna count for third radio.
bssid1	BSSID for first radio.
bssid2	BSSID for second radio.
bssid3	BSSID for third radio.
top_left_x	X Location for Chamber View.
top_left_y	X Location for Chamber View.
eap_id	EAP Identifier, for EAP-PEAP.

Syntax: add_dut name flags img_file sw_version hw_version model_num serial_num serial_port wan_port lan_port ssid1 passwd1 ssid2 passwd2 ssid3 passwd3 mgt_ip api_id flags_mask antenna_count1 antenna_count2 antenna_count3 bssid1 bssid2 bssid3 top_left_x top_left_y eap_id

17. add_dut_ssid

    SSID configuration for a Device-Under-Test (DUT) entry.

    ssid_flags:

```
WEP             | 0x8     # Use WEP encryption
WPA             | 0x10    # Use WPA encryption
```

```
WPA2          | 0x20    # Use WPA2 encryption
WPA3          | 0x100   # Use WPA3 encryption
11r           | 0x200   # Use .11r connection logic
EAP-TTLS      | 0x400   # Use EAP-TTLS connection logic
EAP-PEAP      | 0x800   # Use EAP-PEAP connection logic
```

Argument	Description
name	Name of DUT, cannot contain '.' [R]
ssid_idx	Index of the SSID. Zero-based indexing: (0 - 7) [W]
ssid	WiFi SSID that can be used to connect to DUT
passwd	WiFi Password that can be used to connect to DUT
bssid	BSSID for cooresponding SSID.
ssid_flags	SSID flags, see above.
ssid_flags_mask	SSID flags mask

Syntax: add_dut_ssid name ssid_idx ssid passwd bssid ssid_flags ssid_flags_mask

18. add_dut_notes

    This text will be added to the end of the notes field for DUTs. The text must be entered one line at a time, primarily due to CLI parsing limitations.

Argument	Description
dut	DUT Name. [R]
text	[BLANK] will erase all, any other text will be appended to existing text. `Unescaped Value`

Syntax: add_dut_notes dut text

19. add_file_endp

    Add a File endpoint to the LANforge Manager. This endpoint can then be used to read and/or write data from/to the file system. This is most interesting when the file system in question is some sort of network file system like NFS or iSCSI. If the endpoint already exists, then this command may be used to update the values. This defaults to 4096 read/write sizes, but you can change that with the set_fe_info command.

    Payload Pattern:

```
increasing     |# bytes start at 00 and increase, wrapping if needed.
decreasing     |# bytes start at FF and decrease, wrapping if needed.
random         |# generate a new random payload each time sent.

random_fixed   |# Means generate one random payload, and send it over
                # and over again.
```

```
zeros          |# Payload is all zeros (00).
ones           |# Payload is all ones  (FF).

PRBS_4_0_3     |# Use linear feedback shift register to generate pseudo random s
               # First number is bit-length of register, second two are TAPS (z
               # Seed value is always 1.

PRBS_7_0_6     |# PRBS (see above)
PRBS_11_8_10   |# PRBS (see above)
PRBS_15_0_14   |# PRBS (see above)
custom         |# Enter your own payload with the set_endp_payload cmd.
```

fio_flags:

```
CHECK_MOUNT        | 0x1     # (1) Attempt to verify NFS and SMB mounts match the
AUTO_MOUNT         | 0x2     # (2) Attempt to mount with the provided information
AUTO_UNMOUNT       | 0x4     # (4)   Attempt to un-mount when stopping test.
O_DIRECT           | 0x8     # (8)   Open file with O_DIRECT flag, disables cachi
UNLINK_BW          | 0x10    # (16)  Unlink file before writing.  This works arou
O_LARGEFILE        | 0x20    # (32)  Open files with O_LARGEFILE.  This allows gr
UNMOUNT_FORCE      | 0x40    # (64)  Use -f flag when calling umount
UNMOUNT_LAZY       | 0x80    # (128)  Use -l flag when calling umount
USE_FSTATFS        | 0x100   # (256) Use fstatfs system call to verify file-syste
                             # This can take a bit of time on some file systems,
                             # to detect un-expected file-system unmounts and suc
O_APPEND           | 0x200   # (512) Open files for writing with O_APPEND instead
                             # of O_TRUNC.  This will cause files to grow ever la
DO_CRC             | 0x400   # calculate 32 bit crc for each read/write
SYNC_AFTER_WRITE   | 0x800   # call sync(2) after writing each block
SYNC_BEFORE_CLOSE  | 0x1000  # call sync(2) before closing the file
```

File Endpoint type:

```
fe_generic     |# Uses unspecified file protocol
fe_nfs         |# Does an NFSv3 mount
fe_nfs4        |# Does an NFSv4 mount
fe_cifs        |# Does a CIFS (Samba) mount
fe_iscsi       |# Does a ISCSI mount
fe_cifs/ip6    |# Does an IPv6 CIFS mount
fe_nfs/ip6     |# Does a NFSv3 IPv6 mount
fe_nfs4/ip6    |# Does a NFSv4 IPv6 mount
fe_smb2        |# Does a SMB v2.0 mount
fe_smb2/ip6    |# Does a SMB v2.0 IPv6 mount
fe_smb21       |# Does a SMB v2.1 mount
fe_smb21/ip6   |# Does a SMB v2.1 IPv6 mount
fe_smb30       |# Does a SMB v3.0 mount
fe_smb30/ip6   |# Does a SMB v3.0 IPv6 mount
```

Related Commands

```
postexec_cli       | nc_show_endp %{alias}
```

Argument	Description
alias	Name of endpoint. [R]
shelf	Shelf name/id. [D:1]
resource	Resource number.
port	Port number or name.
type	Endpoint Type (like `fe_nfs`)
min_read_rate	Minimum read rate, bits-per-second.
max_read_rate	Maximum read rate, bits-per-second.
min_write_rate	Minimum write rate, bits-per-second.
max_write_rate	Maximum write rate, bits-per-second.
payload_pattern	Payload pattern, see above.
directory	The directory to read/write in. Absolute path suggested.
prefix	The prefix of the file(s) to read/write.
server_mount	The server to mount, ex: `192.168.100.5/exports/test1`
mount_options	Optional mount options, passed to the mount command. 'NONE' clears.
fio_flags	File-IO flags, see above for details.
mount_dir	Directory to mount/unmount (if blank, will use 'directory').
volume	iSCSI volume to mount
retry_timer	Number of miliseconds to retry errored IO calls before giving up.

Syntax: add_file_endp alias shelf resource port type min_read_rate max_read_rate min_write_rate max_write_rate payload_pattern directory prefix server_mount mount_options fio_flags mount_dir volume retry_timer

20. add_gen_endp

    Add a Generic endpoint to the LANforge Manager. This endpoint will cause an external program to be run, and the results will be sent back to the LANforge system. Due to parsing constraints, you can only use certain programs, but if LANforge does not support a program you want to use, please request the feature from Candela Technologies. Set the actual command to be executed command with `set_gen_cmd`

    Related Commands

    `postexec_cli | nc_show_endp %{alias}`

Argument	Description
alias	Name of endpoint. [R]
shelf	Shelf name/id. [D:1]
resource	Resource number.
port	Port number or name.
type	Endpoint Type : gen_generic [D:gen_generic]

Syntax: add_gen_endp alias shelf resource port type

21. add_l4_endp

Add a Layer 4-7 (HTTP, FTP, TELNET, ...) endpoint to the LANforge Manager. This endpoint can then be used to handle URL(s). If the endpoint already exists, then this command may be used to update the values. If you do not wish to change certain fields from the current value, use `NA` for the value of these fields.

URL Syntax

When entering a URL, use this syntax:

```
[dl | upl] URL [file-to-upload-from-or-download-to]
```

You need to single quote the whole value. Example download:

```
'dl http://www.candelatech.com/index.html /tmp/index.html'
```

Example upload:

```
'ul ftp://www.candelatech.com/uploads /tmp/data.txt'
```

If you want to upload data, use the **ftp** protocol. If you want to emulate HTTP form posts, please use a Generic Endpoint.

Downloaded files are typically `/dev/null` on Linux and `NUL` on Windows to save space. Multiple Layer 4 endpoints writing to the same file will probably create a corrupt output. Relative file names will be place in either `/home/lanforge` on Linux or `%LOCALAPPDATA%\LANforge-GUI_{ver}` on Windows. Note that Windows can make folders under `%LOCALAPPDATA%` **read only** so you might want always write your destination files under `%TEMP%`. LANforge will not expand environmental variables in file names, so instead of writing `$TEMP` on Linux or `%TEMP%\{name}` in Windows you would need to write `/tmp/{name}` or `C:\Users\jreynolds\AppData\Local\Temp\{name}`.

URL **Protocols** can be those that **curl** supports. Here are common examples:

http
http:// or https://user:password@host/file

ftp
ftp://user:password@host/file

telnet
telnet://host:port/

tftp
tftp://host/file

Endpoint Type

There is only one choice for Layer 4 type. This includes all URL protocols.

```
l4_generic | # Layer 4 type
```

URL List

If the `url-is-file` flag is set, then the URL entered below should be a local file name, and it should contain one or more URLs formatted according to our special syntax:

```
dl http://www.example.com/ /dev/null
ul ftp://www.example.com/uploads /home/lanforge/bigfile.bin
dl http://www.example.com/big.png /dev/null
```

Authentication

The HTTP and Proxy authenticate methods and other flags are configured together. The `USE_PROXY_CACHE` is a special flag that lets the endpoint use cache values (for instance, as cached by squid). If this is NOT selected, cached values will not be allowed. Select one or more by adding the values together.

HTTP auth flags:

```
BASIC          | 0x1    # Basic authentication
DIGEST         | 0x2    # Digest (MD5) authentication
GSSNEGOTIATE   | 0x4    # GSS authentication
NTLM           | 0x8    # NTLM authentication
```

Proxy auth flags: The `proxy_auth_type` field is overloaded with additional features. Notable is the `BIND_DNS` option that configures dns lookups to be made from the port interface and not via the default route.

```
BASIC                  | 0x1       # 1    Basic authentication
DIGEST                 | 0x2       # 2    Digest (MD5) authentication
GSSNEGOTIATE           | 0x4       # 4    GSS authentication
NTLM                   | 0x8       # 8    NTLM authentication
USE_PROXY_CACHE        | 0x20      # 32   Use proxy cache
USE_GZIP_COMPRESSION   | 0x40      # 64   Use gzip compression
USE_DEFLATE_COMPRESSION | 0x80     # 128  Use deflate compression
INCLUDE_HEADERS        | 0x100     # 256  especially for IMAP
BIND_DNS               | 0x200     # 512  Make DNS requests go out endpoints Po
USE_IPV6               | 0x400     # 1024 Resolve URL is IPv6.  Will use IPv4 i
DISABLE_PASV           | 0x800     # 2048 Disable FTP PASV option (will use POR
DISABLE_EPSV           | 0x1000    # 4096 Disable FTP EPSV option
LF_L4_REAL_BROWSER_TEST | 0x2000   # 8192 Enable Real Browser Test
MEDIA_PLAYBACKS_RANDOM | 0x4000    # Select random playback between 0 and media
MEDIA_SEEKS_RANDOM     | 0x8000    # Select random media seek count between 0 a
LF_L4_VIDEO_STREAM_TEST | 0x10000  # 65536 Enable Video Stream Test
```

Speed

For configuring speeds, the minimum of the URLs per second and the `max_speed` is used.

CX Construction

A Layer 4 connection is a one-legged cross connect. It is not necessary to create a B-endpoint. After creating your Layer 4 endpoint, create a cross connect with the name as `CX_{endpoint name}` and `rx_endp` as `NA`:

```
add_l4_endp '{alias}' 1 1 eth1 l4_generic NA 1000 600 'dl http://localhost/ /dev
add_cx 'CX_{alias}' default_tm '{alias}' NA
```

Related Commands

```
postexec_cli    | nc_show_endp %{alias}
```

Argument	Description
alias	Name of endpoint. [R]
shelf	Shelf name/id. [D:1]
resource	Resource number.
port	Port number or name.
type	Endpoint Type : `l4_generic`
proxy_port	HTTP Proxy port if you are using a proxy.
timeout	How long to wait for a connection, in milliseconds
url_rate	How often should we process the URL(s), per 10 minutes. • 600: 1/s • 1200: 2/s • 1800: 3/s • 2400: 4/s [R][D:600]
URL	The URL, see syntax above. Can also be a local file.
proxy_server	The name of our proxy server if using one.
proxy_userpwd	The user-name and password for proxy authentication, format: `user:passwd`.
ssl_cert_fname	Name of SSL Certs file.
user_agent	User-Agent string. Leave blank for default. Also SMTP-TO: <a@b.com><c@d.com>...<q@x.com>
proxy_auth_type	Bit-field for allowable proxy-authenticate methods.
http_auth_type	Bit-field for allowable http-authenticate methods.
dns_cache_timeout	In seconds, how long to cache DNS lookups. 0 means no caching at all.
max_speed	In bits-per-second, can rate limit upload or download speed of the URL contents. 0 means infinite.
block_size	TFTP Block size, in bytes.
smtp_from	SMTP From address.

ip_addr	Local IP address, for binding to specific secondary IP.
quiesce_after	Quiesce test after this many URLs have been processed.
quiesce_after_sec	Quiesce test after this many seconds have elapsed.

Syntax: add_l4_endp alias shelf resource port type proxy_port timeout url_rate URL proxy_server proxy_userpwd ssl_cert_fname user_agent proxy_auth_type http_auth_type dns_cache_timeout max_speed block_size smtp_from ip_addr quiesce_after quiesce_after_sec

22. add_channel_group

Add a grouping of DS0 channels to be used by PPP connections.
Supported formats for the channels entry include:

```
'0-23', '0,1,2,3,4,5,7' or '1-5,7,20-23'
```

Channel types (for Digium) are described here:

```
e&m     |  # Channel(s) are signalled using E&M signalling (specific
               # implementation, such as Immediate, Wink, or Feature Group D
               # are handled by the userspace library).

fxsls       |  # Channel(s) are signalled using FXS Loopstart protocol.
fxsgs       |  # Channel(s) are signalled using FXS Groundstart protocol.
fxsks       |  # Channel(s) are signalled using FXS Koolstart protocol.
fxols       |  # Channel(s) are signalled using FXO Loopstart protocol.
fxogs       |  # Channel(s) are signalled using FXO Groundstart protocol.
fxoks       |  # Channel(s) are signalled using FXO Koolstart protocol.
unused      |  # No signalling is performed, each channel in the list remains ic
clear       |  # Channel(s) are bundled into a single span.  No conversion or
               # signalling is performed, and raw data is available on the maste

indclear    |  # Like 'clear' except all channels are treated individually and
               # are not bundled.  'bchan' is an alias for this.

rawhdlc     |  # The zaptel driver performs HDLC encoding and decoding on the
               # bundle, and the resulting data is communicated via the master c

fcshdlc     |  # The zapdel driver performs HDLC encoding and decoding on the
               # bundle and also performs incoming and outgoing FCS insertion
               # and verification.  'dchan' is an alias for this.

nethdlc     |  # The zaptel driver bundles the channels together into an
               # hdlc network device, which in turn can be configured with
               # sethdlc (available separately).
```

These are **not** currently supported:

```
sf       |# Channel(s) are signalled using in-band single freq tone.
          #     Syntax as follows:
          # channel# → sf:[rxfreq],[rxbw],[rxflag],[txfreq],[txlevel],[txflag]
          # rxfreq is rx tone freq in hz, rxbw is rx notch (and decode)
          # bandwith in hz (typically 10.0), rxflag is either 'normal' or
```

```
                # 'inverted', txfreq is tx tone freq in hz, txlevel is tx tone
                # level in dbm, txflag is either 'normal' or 'inverted'. Set
                # rxfreq or txfreq to 0.0 if that tone is not desired.

   dacs        |# The zaptel driver cross connects the channels starting at
                # the channel number listed at the end, after a colon

   dacsrbs     |# The zaptel driver cross connects the channels starting at
                # the channel number listed at the end, after a colon and
                # also performs the DACSing of RBS bits.
```

Argument	Description
alias	Name for this Channel Group. [R]
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]
span_num	The span number. First span is 1, second is 2... [W]
channels	List of channels to add to this group.
type	The channel-type. Use 'clear' for PPP links.
MTU	MTU (and MRU) for this channel group. Must be a multiple of the number of channels if configuring a T1 WanLink.
idle_flag	Idle flag (byte) for this channel group, for instance: 0x7e

Syntax: add_channel_group alias shelf resource span_num channels type MTU idle_flag

23. add_ppp_link

    Add a PPP interface connection. Currently we only support PPP over channel-groups on T1 interfaces. Some of the arguments below are passed directly to the pppd process which negotiates and otherwise creates the ppp interface. You may want to read the man page for pppd for more in-depth discussion of the features.

    channel_groups selects the hardware resources that the PPP link will use. For Multi-Link PPP, you can select multiple Channel-Groups, otherwise select a single one. If you are entering multiple groups, surround all groups with single quotes, like: `'cg1 cg2 cg3'`

    mlppp_descriptor should start with '`magic:`' and have some ascii-hex trailing it. For instance: `magic:00:11:22:33:44` You can use 'NA' if you are not using Multi-Link PPP.

    If you need to pass extra arguments to the pppd software, you can add those arguments to the 'extra_args' value. Be sure to surround the input with single quotes so it is parsed correctly by LANforge.

Argument	Description
shelf	Shelf name/id. [R]
resource	Resource (machine) number. [W]
unit	Unit number for the PPP link. ie, the 7 in ppp7. [W]
src_ip	Source IP address for this PPP connection.
dst_ip	Destination IP address for this PPP connection.
channel_groups	List of channel groups, see above.
debug	YES for debug, otherwise debugging for the ppp connection is off.
auth	YES if you want to authenticate. Default is NO.
persist	YES if you want to persist the connection. This is suggested.
lcp_echo_interval	Seconds between LCP echos, suggest 1.
lcp_echo_failure	LCP echo failures before we determine links is dead, suggest 5.
holdoff	Seconds between attempt to bring link back up if it dies, suggest 1.
mlppp_descriptor	A unique key for use with multi-link PPP connections.
extra_args	Extra arguments to be passed directly to the pppd server.
transport_type	What sort of transport this ppp link uses.
pppoe_transport_port	Port number (or name) for underlying PPPoE transport.
tty_transport_device	TTY device for PPP links associated with TTYs.
run_time_min_ms	Minimum uptime (ms) for PPP link during an experiment, or 0 for the link to be always up.
run_time_max_ms	Maximum uptime (ms) for PPP link during an experiment, or 0 for the link to be always up.
down_time_min_ms	Minimum length of downtime (ms) for PPP link between runs, or 0 for the link to be always up.

down_time_max_ms Maximum length of down-time (ms) for PPP link be-tween runs, or 0 for the link to be always up.

Syntax: add_ppp_link shelf resource unit src_ip dst_ip channel_groups debug auth persist lcp_echo_interval lcp_echo_failure holdoff mlppp_descriptor extra_args transport_type pppoe_transport_port tty_transport_device run_time_min_ms run_time_max_ms down_time_min_ms down_time_max_ms

24. add_profile

Add LANforge device profile. This can give a high level description of how the LANforge system should act. The profile can then be selected in higher-level test cases to auto-generate lower level configuration.

Wifi_Mode

```
Input       : Enum Val  : Shown by nc_show_ports

AUTO        |  0        #  802.11g
802.11a     |  1        #  802.11a
b           |  2        #  802.11b
g           |  3        #  802.11g
abg         |  4        #  802.11abg
abgn        |  5        #  802.11abgn
bgn         |  6        #  802.11bgn
bg          |  7        #  802.11bg
abgnAC      |  8        #  802.11abgn-AC
anAC        |  9        #  802.11an-AC
an          | 10        #  802.11an
bgnAC       | 11        #  802.11bgn-AC
abgnAX      | 12        #  802.11abgn-AX
                        #     a/b/g/n/AC/AX (dual-band AX) support
bgnAX       | 13        #  802.11bgn-AX
anAX        | 14        #  802.11an-AX
aAX         | 15        #  802.11a-AX (6E disables /n and /ac)
abgn7       | 16        #  802.11abgn-EHT
                        #     a/b/g/n/AC/AX/EHT (dual-band AX) support
bgn7        | 17        #  802.11bgn-EHT
an7         | 18        #  802.11an-EHT
a7          | 19        #  802.11a-EHT (6E disables /n and /ac)
```

profile_type

```
as_is       | 0   # Make no changes to current configuration
sta         | 1   # Station device, most likely non mobile.  The EIDs may specify
bridged_ap  | 2   # AP device in bridged mode.  The EIDs may specify radio and br
routed_ap   | 3   # AP in routed mode.   The EIDs may specify radio and upstream
upstream    | 4   # Upstream server device.  The EIDs may specify which ports to
monitor     | 5   # Monitor device/sniffer.  The EIDs may specify which radios to
mobile_sta  | 6   # Mobile station device.  Expects to connect to DUT AP(s) and u
rdd         | 7   # Pair of redirect devices, typically associated with VR to act
client      | 8   # Client-side non-WiFi device (Ethernet port, for instance).
bond        | 9   # Bonded pair of Ethernet ports.
```

```
peer        | 10  # Edge device, client or server (Ethernet port, for instance).
uplink      | 11  # Uplink towards rest of network (can go in virtual router and
vlan        | 12  # 802.1q VLAN.  Specify VID with the 'freq' option.
```

Profile Flags:

```
DHCP-SERVER     | 0x1    # This should provide DHCP server.
WEP             | 0x2    # Use WEP encryption
WPA             | 0x4    # Use WPA encryption
WPA2            | 0x8    # Use WPA2 encryption
SKIP-DHCP-ROAM  | 0x10   # Ask station to not re-do DHCP on roam.
WPA3            | 0x20   # Use WPA3 encryption
11r             | 0x40   # Use 802.11r roaming setup.
EAP-TTLS        | 0x80   # Use 802.1x EAP-TTLS
NAT             | 0x100  # Enable NAT if this object is in a virtual router
EAP-PEAP        | 0x200  # Enable EAP-PEAP
BSS-TRANS       | 0x400  # Enable BSS Transition logic
ALLOW-11W       | 0x800  # Set 11w (MFP/PMF) to optional.
ENABLE-POWERSAVE | 0x1000  # Enable power-save when creating stations.
RRM-IGNORE-BEACON-REQ | 0x2000 # Request station ignore RRM beacon measurement r
ADMIN-UP        | 0x4000 # Request stations be created admin-up.
```

For mac-address pattern, release 5.4.1 and higher also supports sub-byte randomizations. For instance, this will randomize just the low 4 bits of the second octet: xx:xx:xx:xx:*4:xx See Also: add_traffic_profile

Argument	Description
name	Profile Name. [R]
profile_type	Profile type: See above.
wifi_mode	WiFi Mode for this profile.
antenna	Antenna count for this profile.
instance_count	Number of devices (stations, vdevs, etc)
freq	WiFi frequency to be used, 0 means default.
ssid	WiFi SSID to be used, [BLANK] means any.
passwd	WiFi Password to be used (AP Mode), [BLANK] means no password.
profile_flags	Flags for this profile, see above.
flags_mask	Specify what flags to set.
mac_pattern	Optional MAC-Address pattern, for instance: xx:xx:xx:*:*:xx
bandwidth	0 (auto), 20, 40, 80, 160 or 320
eap_id	EAP Identifier
alias_prefix	Port alias prefix, aka hostname prefix.

vid	Vlan-ID (only valid for vlan profiles).
txpower	WiFi Radio requested tx-power. -1 means default.

Syntax: add_profile name profile_type wifi_mode antenna instance_count freq ssid passwd profile_flags flags_mask mac_pattern bandwidth eap_id alias_prefix vid txpower

25. add_profile_notes

    This text will be added to the end of the notes field for Profiles. The text must be entered one line at a time, primarily due to CLI parsing limitations.

Argument	Description
dut	Profile Name. [R]
text	[BLANK] will erase all, any other text will be appended to existing text. `Unescaped Value`

Syntax: add_profile_notes dut text

26. add_traffic_profile

    Add LANforge traffic profile. This can give a high level description of how the LANforge system should generate and/or receive traffic. The profile can then be selected in higher-level test cases to auto-generate lower level configuration.

    Type

```
as_is       | 0    # Make no changes to current configuration
udp         | 1    #
tcp         | 2    #
http        | 3    # Not yet implemented
https       | 4    # Not yet implemented
Iperf3-Server | 5    # iperf3 server
Iperf3-Client | 6    # iperf3 client
ARM-UDP       | 7
ARM-TCP       | 8
VOIP          | 9
MCAST-TX      | 10
MCAST-RX      | 11
PING          | 12
FTP           | 13
UDP6          | 14
TCP6          | 15
```

    Traffic Profile Flags:

```
UP              | 0x1    # Upload direction (this not set means download)
BI-DIRECTIONAL  | 0x2    # Should we do bi-directional traffic?
IPERF_UDP       | 0x4    # If Iperf, should use UDP.  If not set, then will use T
```

    See Also: add_profile

Argument	Description
name	Profile Name. [R]
type	Profile type: See above.
min_speed	Main-Direction Speed in bps.
max_speed	Main-Direction Speed in bps.
min_pdu	Minimum PDU size
max_pdu	Minimum PDU size
tos	IP Type-of-Service
instance_count	Number of connections per device
traffic_profile_flags	Flags for this profile, none defined at this point.
traffic_profile_flags_mask	Specify what flags to set.
min_speed	Opposite-Direction Speed in bps.
max_speed	Opposite-Direction Speed in bps.

Syntax: add_traffic_profile name type min_speed max_speed min_pdu max_pdu tos instance_count traffic_profile_flags traffic_profile_flags_mask min_speed max_speed

27. add_traffic_profile_notes

    This text will be added to the end of the notes field for Profiles. The text must be entered one line at a time, primarily due to CLI parsing limitations.

Argument	Description
dut	Profile Name. [R]
text	[BLANK] will erase all, any other text will be appended to existing text. `Unescaped Value`

Syntax: add_traffic_profile_notes dut text

28. add_text_blob

    These objects are typically used by the GUI or other automated scripts and are not directly parsed or used by the LANforge server.

Argument	Description
type	Text type identifier stream, for instance 'cv-connectivity' [R]
name	Text name, for instance '2-AP-test-case' [R]
text	[BLANK] will erase all, any other text will be appended to existing text. `Unescaped Value`

Syntax: add_text_blob type name text

29. add_t1_span

    Add a T1/E1 SPAN to the LANforge Manager. You will have to actually have T1/E1 hardware in the system before this is a useful thing to do. You will then be able to create channel-groups and PPP links. For the `first_channel`, the setting will depend on the T1/E1 port you wish to use. The first T1/E1 resource will have the first_channel of 1, the second at 25, the third at 49, etc.

    Build-out:

```
133_ft    | 0   # 1-133 feet
266_ft    | 1   # 122-266 feet
399_ft    | 2   # 266-399 feet
533_ft    | 3   # 399-533 feet
655_ft    | 4   # 533-655 feet
-7.5db    | 5   # -7.5db (CSU)
-15db     | 6   # -15db (CSU)
-22.5db   | 7   # -22.5db (CSU)
0db       | 8   # 0db (CSU)
```

    PPP Link Types:

```
Sangoma_T1   |#
Sangoma_E1   |#
Digium_T1    |#
```

    Framing NOTE: d4 is also known as 'sf' or 'superframe'.

Argument	Description
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]
type	Currently supported types listed above. [W]
span_num	The span number. First span is 1, second is 2... [W]
first_channel	The first DS0 channel for this span.
timing	Timing: 0 == do not use, 1 == primary, 2 == secondary..
buildout	Buildout, Integer, see above.
framing	Framing: T1: esf or d4. E1: cas or ccs.
coding	Coding: T1: ami or b8zs. E1: ami or hdb3
pci_bus	PCI Bus number, needed for Sangoma resources.
pci_slot	PCI slot number, needed for Sangoma resources.
CPU_ID	CPU identifier (A, B, etc) for multiport Sangoma resources.

MTU	MTU for this span (used by in-band management, if at all).

Syntax: add_t1_span shelf resource type span_num first_channel timing buildout framing coding pci_bus pci_slot CPU_ID MTU

30. add_voip_endp

    Add a VOIP (Voice over IP) to the LANforge Manager. If the endpoint already exists, then this command may be used to update the values. If the sip_gateway is 'AUTO', then the management IP for that particular machine will be used.

Argument	Description
alias	Name of endpoint. [R]
shelf	Shelf name/id. [D:1]
resource	Resource number.
port	Port number or name.
phone_num	Phone number for Endpoint
rtp_port	RTP port to use for send and receive.
sip_gateway	SIP Gateway/Proxy Name, this is who to register with, or AUTO
tx_sound_file	File name containing the sound sample we will be playing.
rx_sound_file	File name to save received PCM data to. Will be in WAV format, or AUTO
VAD_timer	How much silence (milliseconds) before VAD is enabled.
VAD_max_timer	How often should we force a packet, even if VAD is on.
gateway_port	IP Port for SIP gateway (defaults to 5060).
display_name	User-Name to be displayed. Use AUTO to display phone number. BT Identifier for Mobile.
proxy_passwd	Password to be used when registering with proxy/gateway.
peer_phone_num	Use AUTO to use phone number of peer endpoint, otherwise specify a number: user[@host[:port]]

auth_user_name	Use this field for authentication user name. AUTO or blank mean use phone number.
ip_addr	Use this IP for local IP address. Useful when there are multiple IPs on a port.

Syntax: add_voip_endp alias shelf resource port phone_num rtp_port sip_gateway tx_sound_file rx_sound_file VAD_timer VAD_max_timer gateway_port display_name proxy_passwd peer_phone_num auth_user_name ip_addr

31. add_vr

    Add or modify a Virtual Router. Virtual Routers are used in conjunction with LANforge-ICE to provide advanced network emulation. **Flags** are defined as:

```
USE_XORP_OSPF      | 0x1       # Enable Xorp router daemon with OSPF (IPv4) proto
USE_XORP_MCAST     | 0x2       # Enable Xorp Multicast routing (requires OSPF to
USE_XORP_SHA       | 0x4       # Enable Telcordia's Xorp SHA option (requires OSP
USE_IPV6_RADVD     | 0x8       # Enable IPv6 RADV Daemon for interfaces in this v
USE_IPV6           | 0x10      # Enable IPv6 OSPF routing for this virtual router
ENABLE_BGP         | 0x20      # Set this to zero if you don't want BGP on this V
4BYTE_AS_NUMBER    | 0x40      # Sets corresponding Xorp flag.
ROUTE_REFLECTOR    | 0x80      # Act as BGP Route Reflector.
BGP_CONFED         | 0x100     # Configure BGP in a confederation.
BGP_DAMPING        | 0x200     # Enable BGP damping section in Xorp configuration
USE_RIP            | 0x400     # Enable RIP routing protocol in Xorp.
RIP_ACCEPT_DR      | 0x800     # Tell RIP to accept default-routes.
USE_XORP_OLSR      | 0x1000    # Enable OLSR routing protocol in Xorp.
```

Argument	Description
alias	Name of virtual router. [R]
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]
notes	Notes for this Virtual Router. Put in quotes if the notes include white-space.
X	X coordinate to be used when drawn in the LANforge-GUI.
Y	Y coordinate to be used when drawn in the LANforge-GUI.
width	Width to be used when drawn in the LANforge-GUI.
height	Height to be used when drawn in the LANforge-GUI.
flags	Virtual router flags, see above for definitions.
vr_id	Leave blank, use NA or 0xFFFF unless you are certain of the value you want to enter.

Syntax: add_vr alias shelf resource notes X Y width height flags vr_id

32. add_vr_bgp

    Add BGP configuration to a virtual router. **Flags**:

```
ENABLE_BGP        |      0x20  # Set this to zero if you don't want BGP on this VR
4BYTE_AS_NUMBER   |      0x40  # Sets corresponding Xorp flag.
ROUTE_REFLECTOR   |      0x80  # Act as BGP Route Reflector.
BGP_CONFED        |     0x100  # Configure BGP in a confederation.
BGP_DAMPING       |     0x200  # Enable BGP damping section in Xorp configuration
```

Argument	Description
vr_id	Name of virtual router. [R]
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]
bgp_id	BGP Identifier: IPv4 Address
local_as	BGP Autonomous System number, 1-65535
flags	Virtual router BGP flags, see above for definitions.
cluster_id	Cluster ID, IPv4 Address. Use NA if not clustering.
confed_id	Confederation ID 1-65535. Use NA if not in a confederation.
half_life	Halflife in minutes for damping configuration.
max_suppress	Maximum hold down time in minutes for damping configuration.
reuse	Route flag damping reuse threshold, in minutes.
suppress	Route flag damping cutoff threshold, in minutes.

Syntax: add_vr_bgp vr_id shelf resource bgp_id local_as flags cluster_id confed_id half_life max_suppress reuse suppress

33. add_bgp_peer

    Add/Modify BGP peer configuration to a virtual router. **Flags:**

```
ENABLE_PEER           | 0x1  # Set this to zero if you don't want this peer enabl
PEER_CLIENT           | 0x2  # Sets corresponding Xorp flag in BGP Peer section.
PEER_CONFED_MEMBER    | 0x4  # Sets corresponding Xorp flag in BGP Peer section.
PEER_UNICAST_V4       | 0x8  # Sets corresponding Xorp flag in BGP Peer section.
```

Argument	Description
vr_id	Name of virtual router. [R]
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]

peer_index	Peer index in this virtual router (0-7).
flags	Virtual router BGP Peer flags, see above for definitions.
peer_id	BGP Peer Identifier: IPv4 Address
as	BGP Peer Autonomous System number, 0-65535
local_dev	BGP Peer Local interface.
nexthop	BGP Peer Nexthop, IPv4 Address.
holdtime	BGP Peer hold-time.
delay_open_time	BGP Peer delay open time.
nexthop6	BGP Peer IPv6 Nexthop address.

Syntax: add_bgp_peer vr_id shelf resource peer_index flags peer_id as local_dev nexthop holdtime delay_open_time nexthop6

34. add_vrcx

Add or modify a Virtual Router Connection Endpoint. Virtual Router Connection Endpoints are used to logically connect two Virtual Routers with an emulated network link. Typically, 2 pairs of redirect virtual interfaces are bridged by a WanLink (which provides the network emulation.) The 'A' port in each pair of redirect devices is associated with one virtual router and has and IP address. Both endpoints should have the IP on the same subnet. The WanLink bridges the two 'B' sides of the redirect device pair. A pair of Connection Endpoint objects are required, with reversed values in their port configuration to make a connection. **Flags** can be entered in HEX if preceded by 0x. Add flags together to get desired options. Must use apply_vr_cfg for changes to take effect.

```
subnet_0        | 0x1       # Specify subnet 0
subnet_1        | 0x2       # Specify subnet 1
subnet_2        | 0x4       # Specify subnet 2
subnet_3        | 0x8       # Specify subnet 3
subnet_4        | 0x10      # Specify subnet 4
subnet_5        | 0x20      # Specify subnet 5
subnet_6        | 0x40      # Specify subnet 6
subnet_7        | 0x80      # Specify subnet 7
nat_enabled     | 0x100     # This connection will NAT outgoing packets
dhcpd_enabled   | 0x200     # Serve IPv4 DHCP on this interface
custom_dhcpd    | 0x400     # Use custom DHCP config file
use_multicast   | 0x800     # Use this interface for multicast and-rp
use_vrrp        | 0x1000    # Use this interface for VRRP
ipv6_enabled    | 0x2000    # Serve IPv6 DHCP on this interface
```

Argument	Description
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]

vr_name	Virtual Router this endpoint belongs to. Use 'FREE_LIST' to add a stand-alone endpoint. [R][D:FREE_LIST]
local_dev	Name of port A, the local network device pair.
local_dev_b	Name of port B for the local redirect device pair.
remote_dev	Name the remote network device.
remote_dev_b	Name of port B for the remote network device.
wanlink	The name of the WanLink that connects the two B ports.
X	X coordinate to be used when drawn in the LANforge-GUI.
Y	Y coordinate to be used when drawn in the LANforge-GUI.
width	Width to be used when drawn in the LANforge-GUI.
height	Height to be used when drawn in the LANforge-GUI.
flags	Flags, specify if subnets 0-7 are in use, see above for others.
subnets	Subnets associated with this link, format: 1.1.1.1/24,1.1.2.1/16...
nexthop	The next-hop to use when routing packets out this interface.
dhcp_lease_time	DHCP Lease time (in seconds)
dhcp_dns	IP Address of DNS server.
dhcp_min	Minimum IP address range to serve.
dhcp_max	Minimum IP address range to serve.
dhcp_domain	DHCP Domain name to serve.
interface_cost	If using OSPF, this sets the cost for this link (1-65535).
ospf_area	If using OSPF, this sets the OSPF area for this interface. Default is 0.0.0.0.
rip_metric	If using RIP, this determines the RIP metric (cost), (1-15, 15 is infinite).
vrrp_ip	VRRP IPv4 address..ignored if not flagged for VRRP.

vrrp_ip_prefix	Number of bits in subnet mask, ie 24 for 255.255.255.0
vrrp_id	VRRP id, must be unique in this virtual router (1-255)
vrrp_priority	VRRP Priority (1-255, higher is more priority.)
vrrp_interval	VRRP broadcast message interval, in seconds (1-255)
dhcp_dns6	IPv6 Address of DNS server.
dhcp_min6	Minimum IPv6 address to serve.
dhcp_max6	Minimum IPv6 address to serve.

Syntax: add_vrcx shelf resource vr_name local_dev local_dev_b remote_dev remote_dev_b wanlink X Y width height flags subnets nexthop dhcp_lease_time dhcp_dns dhcp_min dhcp_max dhcp_domain interface_cost ospf_area rip_metric vrrp_ip vrrp_ip_prefix vrrp_id vrrp_priority vrrp_interval dhcp_dns6 dhcp_min6 dhcp_max6

35. add_vrcx2

    Modify a Virtual Router Connection Endpoint. There were getting to be too many options to fit in the add_vrcx command, so this second command will need to be used for certain configuration.

Argument	Description
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]
vr_name	Virtual Router this endpoint belongs to. Use 'FREE_LIST' to add a stand-alone endpoint. [W][D:FREE_LIST]
local_dev	Name of port A for the connection.
subnets6	IPv6 Subnets associated with this link, format: aaaa:bbbb::0/64,cccc:dddd:eeee::0/64...
nexthop6	The IPv6 next-hop to use when routing packets out this interface.
dhcp_ignore1	MAC address and per 65535 chance MAC should be ignored by DHCPd, format: MAC-prcnt, example: 00:11:22:33:44:55-65535
dhcp_ignore2	MAC address and per 65535 chance MAC should be ignored by DHCPd, format: MAC-prcnt, example: 00:11:22:33:44:55-65535

dhcp_ignore3	MAC address and per 65535 chance MAC should be ignored by DHCPd, format: MAC-prcnt, example: 00:11:22:33:44:55-65535
dhcp_ignore4	MAC address and per 65535 chance MAC should be ignored by DHCPd, format: MAC-prcnt, example: 00:11:22:33:44:55-65535

Syntax: add_vrcx2 shelf resource vr_name local_dev subnets6 nexthop6 dhcp_ignore1 dhcp_ignore2 dhcp_ignore3 dhcp_ignore4

36. set_vrcx_cost

    Modify a Virtual Router Connection interface cost. See 'add_vrcx' for info on how to create a connection.

Argument	Description
shelf	Shelf name/id. [R][D:1]
resource	Resource number. [W]
vr_name	Virtual Router this endpoint belongs to. Use 'FREE_LIST' to add a stand-alone endpoint. [W][D:FREE_LIST]
local_dev	Name of port A for the local redirect device pair.
local_dev_b	Name of port B for the local redirect device pair.
remote_dev	Name of port B for the remote redirect device pair.
remote_dev_b	Name of port B for the remote redirect device pair.
wanlink	The name of the WanLink that connects the two B ports.
interface_cost	If using OSPF, this sets the cost for this link (1-65535).

Syntax: set_vrcx_cost shelf resource vr_name local_dev local_dev_b remote_dev remote_dev_b wanlink interface_cost

37. add_endp

    Add an endpoint to the LANforge Manager. The endpoint may then be added to a cross-connect. If the endpoint already exists, then this command may be used to update the values. Note that you can leave everything after 'port' off the command, and default values will be used. If you are configuring a TCP connection to make many connections, then use 0 (zero) for the IP Port so that the OS can choose a new one for each connection.

    Payload_pattern can be:

```
increasing        |  #  bytes start at 00 and increase, wrapping if needed
decreasing        |  #  bytes start at FF and decrease, wrapping if needed
random            |  #  generate a new random payload each time sent
random_fixed      |  #  means generate one random payload, and send it over and
```

```
zeros              |  #  payload is all zeros (00)
ones               |  #  payload is all ones  (FF)

PRBS_4_0_3         |  #  Use linear feedback shift register to generate pseudo ra
                   |  #  First number is bit-length of register, second two are
                   |  #  TAPS (zero-based indexes). Seed value is always 1.

PRBS_7_0_6         |  #  PRBS (see above)
PRBS_11_8_10       |  #  PRBS (see above)
PRBS_15_0_14       |  #  PRBS (see above)
custom             |  #  Enter your own payload with the set_endp_payload cmd.
```

Endpoint **Types** can be of these types:

```
lf                 | # LF protocol
lf_udp             | # UDP IPv4 connection
lf_udp6            | # UDP IPv6 connection
lf_tcp             | # TCP IPv4 connection
lf_tcp6            | # TCP IPv6 connection
custom_ether       | # LF frames with custom options, use with playback
custom_udp         | # LF UDP IPv4 frame with custom options
custom_tcp         | # LF TCP IPv4 frame with custom options
mc_udp             | # LF Multicast IPv4
custom_mc_udp      | # LF Multicast UDP IPv4
lf_sctp            | # SCTP IPv4 protocol
lf_sctp6           | # SCTP IPv6 protocol
```

Related Commands

```
postexec_cli       | nc_show_endp %{alias}
```

Argument	Description
alias	Name of endpoint. [R]
shelf	Shelf name/id. [D:1]
resource	Resource number.
port	Port/Interface name or number.
type	Endpoint Type: See above.
ip_port	IP Port: IP port for layer three endpoints. Use -1 to let the LANforge server automatically configure the ip_port. Layer 2 endpoints will ignore this argument. Use 0 for 'ANY', and let the OS choose.
is_rate_bursty	Yes means bursty, anything else means NO.
min_rate	Minimum transmit rate (bps), or only rate if not bursty.
max_rate	Maximum transmit rate (bps), used if in bursty mode.

is_pkt_sz_random	Yes means use random sized packets, anything else means NO.
min_pkt	Minimum packet size, including all headers. -1 means AUTO (5.3.2+) [D:-1]
max_pkt	Maximum packet size, including all headers. 0 means 'same', -1 means AUTO (5.3.2+) [D:0]
payload_pattern	Payload pattern, see above.
use_checksum	Yes means checksum the payload, anything else means NO.
ttl	Time-to-live, used by UDP Multicast Endpoints only.
send_bad_crc_per_million	If NIC supports it, will randomly send X per million packets with bad ethernet Frame Check Sum.
multi_conn	If > 0, will create separate process with this many connections per endpoint. See AUTO_HELPER flag

Syntax: add_endp alias shelf resource port type ip_port is_rate_bursty min_rate max_rate is_pkt_sz_random min_pkt max_pkt payload_pattern use_checksum ttl send_bad_crc_per_million multi_conn

38. add_event

Related Commands

Argument	Description
event_id	Numeric ID for the event to modify, or 'new' if creating a new one. [W][D:new]
details	Event text description. Cannot include double-quote characters.
priority	See set_event_priority for available priorities.
name	Event entity name.

Syntax: add_event event_id details priority name

39. add_bond

    Add a Linux Bond Device. Specify one or more network devices to be added to the bonded interface.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of the bond device. [W]
network_devs	Comma-separated list of network devices: eth1,eth2,eth3... [W]

Syntax: add_bond shelf resource port network_devs

40. add_br

    Add a Linux Bridge Device. Specify one or more network devices to be added to the bridge. This requires that the 'bridge-utils' package be installed on your Linux system. Most of the bridge settings are only used if spanning-tree is enabled. For more information on the spanning-tree values, see: br_* configuration is ignored. **br_flags** can be:

```
none         |      0x0      # no features
stp_enabled  |      0x1      # Enable Spanning Tree Protocol (STP)
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of the bridge device. [W]
network_devs	Comma-separated list of network devices: eth1,eth2,eth3...
br_flags	Bridge flags, see above.
br_priority	Bridge priority, 16-bit number.
br_aging_time	MAC aging time, in seconds, 32-bit number.
br_max_age	How long until STP considers a non-responsive bridge dead.
br_hello_time	How often does the bridge send out STP hello packets.
br_forwarding_delay	How long to wait until the bridge will start forwarding packets.

Syntax: add_br shelf resource port network_devs br_flags br_priority br_aging_time br_max_age br_hello_time br_forwarding_delay

41. add_mvlan

    Add a MAC based VLAN. This command requires that the designated machine support the macvlan kernel module. A MAC-VLAN interface is a lightweight virtual interface that is made unique by its MAC address. Do not add two MAC vlans with the same MAC to the same interface. In most cases, you do not want to duplicate a MAC at all! After creating the MAC-VLAN

interface, you will need to configure its IP and other information. If you wish to create a MAC VLAN with a specific name, specify the index as well. If not specified, one will be automatically selected for you. For mac-address pattern, release 5.4.1 and higher also supports sub-byte randomizations. For instance, this will randomize just the low 4 bits of the second octet: xx:xx:xx:xx:*4:xx

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Port number of an existing Ethernet interface. [W]
MAC	The MAC address, can also use parent-pattern in 5.3.8 and higher: `xx:xx:xx:*:*:xx`
index	Optional: The index of the VLAN, (the **4** in `eth0#4`)
old_name	The temporary name, used for configuring un-discovered hardware.
report_timer	Report timer for this port, leave blank or use NA for defaults.
flags	0x1: Create admin-down.

Syntax: add_mvlan shelf resource port MAC index old_name report_timer flags

42. add_rdd

Add a Redirect-Device. This command requires that the designated machine support the redirdev kernel module. Redirect-Devices act like a pair of physical Ethernet interfaces connected externally by a loop-back cable, and are useful for creating virtual networks. Currently, the main reason to do this is to run LANforge ICE on a single interface in conjunction with routing. The basic idea is to create a pair of redirect devices. Give one an IP address that you want the local machine to have. The other redirect interface in the pair will not have an IP address and will be bridged by LANforge ICE (WanLink) to the real Ethernet interface, which also will not have an IP address. **It is possible to add 802.1Q and MAC-VLANs on top of redirect devices as well.**

To create an redirect-device pair, run this command twice, for example:

```
add_rdd 1 1 rdd0 rdd1
add_rdd 1 1 rdd1 rdd0
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of the Redirect Device to create. [W]
peer_ifname	The peer (other) RedirectDevice in this pair.

report_timer	Report timer for this port, leave blank or use NA for defaults.

Syntax: add_rdd shelf resource port peer_ifname report_timer

43. add_gre

    Add a GRE Tunnel. These are point-to-point devices often used to connect to Cisco and similar routed networks.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of the GRE to create, suggested to start with 'gre' [W]
local_lower_ip	The local lower-level IP to use.
remote_lower_ip	The remote lower-level IP to use.
report_timer	Report timer for this port, leave blank or use NA for defaults.

Syntax: add_gre shelf resource port local_lower_ip remote_lower_ip report_timer

44. add_sec_ip

    Add or update secondary IP Address(es). Secondary IPs can be used to send and receive traffic, and are generally lighter weight than mac-vlans. They do share a network device (including routing table, MAC address, and network stats) with the base device, so they are not quite as flexible as mac-vlans and other virtual interfaces.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of network device (Port) to which these IPs will be added. [W]
ip_list	IP1/prefix,IP2/prefix,...IPZ/prefix. [W]

Syntax: add_sec_ip shelf resource port ip_list

45. add_vlan

    Add an 802.1Q VLAN. This command requires that the designated machine support the 8021q kernel module. After creating the 802.1Q VLAN interface, you will need to configure its IP and other information.

Argument	Description

shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Port number of an existing Ethernet interface. [W]
vid	The VLAN-ID for this 802.1Q VLAN interface. [W]
old_name	The temporary name, used for configuring un-discovered hardware.
report_timer	Report timer for this port, leave blank or use NA for defaults.

Syntax: add_vlan shelf resource port vid old_name report_timer

46. add_venue

Add or modify a Venue. Venues are used to group WiFi stations and vAP, but unless you are using certain third party integrated tools, this will not have any affect on LANforge. If you are not sure what this is for, then it is not for you!

freq_24: 16-bit number to specify 2.4Ghz channels to use. OR the values together to choose a list of available channels,

```
ALL    | 0xFFFF     # ALL
Ch 1   | 0x1        # Channel 1
Ch 2   | 0x2        # Channel 2
Ch 3   | 0x4        # Channel 3
```

freq_5: See this page for cooresponding frequencies: http://en.wikipedia.org/wiki/List_of_WLAN_channels

```
Ch 36    | 0x00000001        # Channel 36  5180
Ch 38    | 0x00000002        # Channel 38  5190
Ch 40    | 0x00000004        # Channel 40  5200
Ch 42    | 0x00000008        # Channel 42  5210
Ch 44    | 0x00000010        # Channel 44  5220
Ch 46    | 0x00000020        # Channel 46  5230
Ch 48    | 0x00000040        # Channel 48  5240
Ch 52    | 0x00000080        # Channel 52  5260
Ch 56    | 0x00000100        # Channel 56  5280
Ch 60    | 0x00000200        # Channel 60  5300
Ch 64    | 0x00000400        # Channel 64  5320
Ch 100   | 0x00000800        # Channel 100 5500
Ch 104   | 0x00001000        # Channel 104 5520
Ch 108   | 0x00002000        # Channel 108 5540
Ch 112   | 0x00004000        # Channel 112 5560
Ch 116   | 0x00008000        # Channel 116 5580
Ch 120   | 0x00010000        # Channel 120 5600
Ch 124   | 0x00020000        # Channel 124 5620
Ch 128   | 0x00040000        # Channel 128 5640
Ch 132   | 0x00080000        # Channel 132 5660
Ch 136   | 0x00100000        # Channel 136 5680
Ch 140   | 0x00200000        # Channel 140 5700
Ch 149   | 0x00400000        # Channel 149 5745
```

```
Ch 153    | 0x00800000        # Channel 153 5765
Ch 157    | 0x01000000        # Channel 157 5785
Ch 161    | 0x02000000        # Channel 161 5805
Ch 165    | 0x04000000        # Channel 165 5825
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
venu_id	Number to uniquely identify this venue on this resource. [W]
x1	Floating point coordinate for lower-left corner.
y1	Floating point coordinate for lower-left corner.
x2	Floating point coordinate for upper-right corner.
y2	Floating point coordinate for upper-right corner.
freq_24	Frequency list for 2.4Ghz band, see above.
freq_5	Frequency list for 5Ghz band, see above.
description	User-supplied description, ie: `Big City Ball Park`; 47-characters max.

Syntax: add_venue shelf resource venu_id x1 y1 x2 y2 freq_24 freq_5 description

47. add_sta

Add a WIFI Virtual Station (Virtual STA) interface. This command requires that the designated machine support LANforge driver for the Atheros brand WIFI NICs. A Virtual STA interface is a virtual interface that acts like a real wireless client. After creating the Virtual STA interface, you will need to configure its IP and other information. `NA` can be used for any values that you do not wish to modify.

Flags are currently defined as:

```
wpa_enable          | 0x10          # Enable WPA
custom_conf         | 0x20          # Use Custom wpa_supplicant config file.
wep_enable          | 0x200         # Use wpa_supplicant configured for WEP encr
wpa2_enable         | 0x400         # Use wpa_supplicant configured for WPA2 enc
ht40_disable        | 0x800         # Disable HT-40 even if hardware and AP supp
scan_ssid           | 0x1000        # Enable SCAN-SSID flag in wpa_supplicant.
passive_scan        | 0x2000        # Use passive scanning (don't send probe req
disable_sgi         | 0x4000        # Disable SGI (Short Guard Interval).
lf_sta_migrate      | 0x8000        # OK-To-Migrate (Allow station migration bet
verbose             | 0x10000       # Verbose-Debug:  Increase debug info in wpa
80211u_enable       | 0x20000       # Enable 802.11u (Interworking) feature.
80211u_auto         | 0x40000       # Enable 802.11u (Interworking) Auto-interne
80211u_gw           | 0x80000       # AP Provides access to internet (802.11u In
80211u_additional   | 0x100000      # AP requires additional step for access (80
```

```
80211u_e911           | 0x200000     # AP claims emergency services reachable (80
80211u_e911_unauth    | 0x400000     # AP provides Unauthenticated emergency serv
hs20_enable           | 0x800000     # Enable Hotspot 2.0 (HS20) feature.  Requir
disable_gdaf          | 0x1000000    # AP:  Disable DGAF (used by HotSpot 2.0).
8021x_radius          | 0x2000000    # Use 802.1x (RADIUS for AP).
80211r_pmska_cache    | 0x4000000    # Enable oportunistic PMSKA caching for WPA2
disable_ht80          | 0x8000000    # Disable HT80 (for AC chipset NICs only)
ibss_mode             | 0x20000000   # Station should be in IBSS mode.
osen_enable           | 0x40000000   # Enable OSEN protocol (OSU Server-only Auth
disable_roam          | 0x80000000   # Disable automatic station roaming based or
ht160_enable          | 0x100000000  # Enable HT160 mode.
disable_fast_reauth   | 0x200000000  # Disable fast_reauth option for virtual sta
mesh_mode             | 0x400000000  # Station should be in MESH mode.
power_save_enable     | 0x800000000  # Station should enable power-save.  May not
create_admin_down     | 0x1000000000 # Station should be created admin-down.
wds-mode              | 0x2000000000 # WDS station (sort of like a lame mesh), no
no-supp-op-class-ie   | 0x4000000000 # Do not include supported-oper-class-IE in
txo-enable            | 0x8000000000 # Enable/disable tx-offloads, typically mana
use-wpa3              | 0x10000000000 # Enable WPA-3 (SAE Personal) mode.
use-bss-transition    | 0x80000000000 # Enable BSS transition.
disable-twt           | 0x100000000000 # Disable TWT mode
disable-ofdma         | 0x200000000000 # Disable OFDMA mode
disable-obss-scan     | 0x400000000000 # Disable OBSS SCAN feature in supplicant.
ft-roam-over-ds       | 0x800000000000 # Roam over DS when AP supports it.
rrm-ignore-beacon-req | 0x1000000000000 # Ignore (reject) RRM Beacon measurement
use-owe               | 0x2000000000000 # Enable OWE
be320-enable          | 0x4000000000000 # Enable 320Mhz mode.
```

To set any value to the default (or un-set), use `DEFAULT`. You may have to reboot the system to have the defaults take affect.

Rate configuration:

```
DEFAULT     |# Use maximum available speed
MCS0-76     |# /n rates
[bitmap]    |# '0xff 00 ...' to directly specify the MCS bitmap.
/b          |# 1Mbps, 2Mbps, 5.5 Mbps, 11 Mbps
/a/g        |# 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 M
```

Groups:

- 802.11b
- 802.11/a/g
- 802.11/a/b/g
- 1 Stream /n
- 2 Streams /n
- 3 Streams /n
- v-1 Stream /AC
- v-2 Streams /AC

- v-3 Streams /AC

Mode

```
Input       : Enum Val  : Shown by nc_show_ports
AUTO        |  0        #  802.11g
802.11a     |  1        #  802.11a
b           |  2        #  802.11b
g           |  3        #  802.11g
abg         |  4        #  802.11abg
abgn        |  5        #  802.11abgn
bgn         |  6        #  802.11bgn
bg          |  7        #  802.11bg
abgnAC      |  8        #  802.11abgn-AC
anAC        |  9        #  802.11an-AC
an          | 10        #  802.11an
bgnAC       | 11        #  802.11bgn-AC
abgnAX      | 12        #  802.11abgn-AX
                        #     a/b/g/n/AC/AX (dual-band AX) support
bgnAX       | 13        #  802.11bgn-AX
anAX        | 14        #  802.11an-AX
aAX         | 15        #  802.11a-AX (6E disables /n and /ac)
abgn7       | 16        #  802.11abgn-EHT
                        #     a/b/g/n/AC/AX/EHT (dual-band AX) support
bgn7        | 17        #  802.11bgn-EHT
an7         | 18        #  802.11an-EHT
a7          | 19        #  802.11a-EHT (6E disables /n and /ac)
```

Related Commands

```
preexec_method     | baseCheckRadioExists
postexec_cli       | nc_show_port %{shelf} %{resource} %{sta_name} 0x1
```

For mac-address pattern, release 5.4.1 and higher also supports sub-byte randomizations. For instance, this will randomize just the low 4 bits of the second octet: xx:xx:xx:xx:*4:xx

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
radio	Name of the physical radio interface, for example: wiphy0
sta_name	Name for this Virtual STA, for example: sta0 [W]
flags	Flags for this interface (see above.)
ssid	SSID for this Virtual STA. Use [BLANK] for empty SSID. Start with `0x` for HEX interpretation.

nickname	Nickname for this Virtual STA. (No longer used)
key	Encryption key (WEP, WPA, WPA2, WPA3, etc) for this Virtual STA. Prepend with 0x for ascii-hex input.
AP	The Access Point BSSID this Virtual STA should be associated with (example: `00:11:22:33:4:55`, or `DEFAULT` for any).
wpa_cfg_file	WPA Supplicant config file.
MAC	The MAC address, can also use parent-pattern in 5.3.8 and higher: `xx:xx:xx:*:*:xx`
mode	WiFi mode: See above, use the numeric value (0 means AUTO, 1 means 802.11a, etc. [D:0]
rate	Max rate, see help above.
MAX_AMSDU	1 == enabled, 0 == disabled, 0xFF == do not set.
AMPDU_factor	0-3, or 0xFF to not set.
AMPDU_density	0-7, or 0xFF to not set.
sta_br_IP	IP Address for station bridging. Set to 0.0.0.0 to use MAC bridging.
flags_mask	If set, only these flags will be considered.
ieee80211w	Management Frame Protection: 0: disabled, 1: optional, 2: Required.
x_coord	Floating point number.
y_coord	Floating point number.
z_coord	Floating point number.

Syntax: add_sta shelf resource radio sta_name flags ssid nickname key AP wpa_cfg_file MAC mode rate MAX_AMSDU AMPDU_factor AMPDU_density sta_br_IP flags_mask ieee80211w x_coord y_coord z_coord

48. add_vap

    Add a WIFI Virtual Access Point (VAP) interface. This command requires that the designated machine support the LANforge wifi driver for the Atheros brand WIFI NICs. A Virtual AP interface is a virtual interface that acts like a real Access Point. After creating the Virtual AP interface, you will need to configure it's IP and other information. 'NA' can be used for any values that you do not wish to modify.

    AP **flags** are currently defined as:

```
enable_wpa          | 0x10          # Enable WPA
hostapd_config      | 0x20          # Use Custom hostapd config file.
```

```
enable_80211d          | 0x40             # Enable 802.11D to broadcast country-coo
short_preamble         | 0x80             # Allow short-preamble
pri_sec_ch_enable      | 0x100            # Enable Primary/Secondary channel switch
wep_enable             | 0x200            # Enable WEP Encryption
wpa2_enable            | 0x400            # Enable WPA2 Encryption
disable_ht40           | 0x800            # Disable HT-40 (will use HT-20 if availa
verbose                | 0x10000          # Verbose-Debug:  Increase debug info in
80211u_enable          | 0x20000          # Enable 802.11u (Interworking) feature.
80211u_auto            | 0x40000          # Enable 802.11u (Interworking) Auto-inte
80211u_gw              | 0x80000          # AP Provides access to internet (802.11u
80211u_additional      | 0x100000         # AP requires additional step for access
80211u_e911            | 0x200000         # AP claims emergency services reachable
80211u_e911_unauth     | 0x400000         # AP provides Unauthenticated emergency s
hs20_enable            | 0x800000         # Enable Hotspot 2.0 (HS20) feature.  Req
disable_dgaf           | 0x1000000        # AP Disable DGAF (used by HotSpot 2.0).
8021x_radius           | 0x2000000        # Use 802.1x (RADIUS for AP).
80211r_pmska_cache     | 0x4000000        # Enable oportunistic PMSKA caching for W
disable_ht80           | 0x8000000        # Disable HT80 (for AC chipset NICs only)
80211h_enable          | 0x10000000       # Enable 802.11h (needed for running on D
osen_enable            | 0x40000000       # Enable OSEN protocol (OSU Server-only A
mcast_to_ucast         | 0x80000000       # Request AP to translate multicats to un
ht160_enable           | 0x100000000      # Enable HT160 mode.
create_admin_down      | 0x1000000000     # Station should be created admin-down.
use-wpa3               | 0x10000000000    # Enable WPA-3 (SAE Personal) mode.
use-bss-load           | 0x20000000000    # Enable BSS Load IE in Beacons and Probe
use-rrm-report         | 0x40000000000    # Enable Radio measurements IE in beacon
use-bss-transition     | 0x80000000000    # Enable BSS transition.
be320-enable           | 0x40000000000000 # Enable 320Mhz mode.
```

Mode options are below:

```
Input        : Enum Val  : Shown by nc_show_ports
AUTO         |  0        #  802.11g
802.11a      |  1        #  802.11a
b            |  2        #  802.11b
g            |  3        #  802.11g
abg          |  4        #  802.11abg
abgn         |  5        #  802.11abgn
bgn          |  6        #  802.11bgn
bg           |  7        #  802.11bg
abgnAC       |  8        #  802.11abgn-AC
anAC         |  9        #  802.11an-AC
an           | 10        #  802.11an
bgnAC        | 11        #  802.11bgn-AC
abgnAX       | 12        #  802.11abgn-AX
                         #     a/b/g/n/AC/AX (dual-band AX) support
bgnAX        | 13        #  802.11bgn-AX
anAX         | 14        #  802.11an-AX
aAX          | 15        #  802.11a-AX (6E disables /n and /ac)
abgn7        | 16        #  802.11abgn-EHT
                         #     a/b/g/n/AC/AX/EHT (dual-band AX) support
bgn7         | 17        #  802.11bgn-EHT
```

```
an7          | 18        #  802.11an-EHT
a7           | 19        #  802.11a-EHT (6E disables /n and /ac)
```

To set any value to the DEFAULT (or un-set), use `DEFAULT`. You may have to reboot the system to have the defaults take affect. For mac-address pattern, release 5.4.1 and higher also supports sub-byte randomizations. For instance, this will randomize just the low 4 bits of the second octet: xx:xx:xx:xx:*4:xx

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
radio	Name of the physical radio interface, for example: wiphy0 [W]
ap_name	Name for this Virtual AP, for example: vap0
flags	Flags for this interface (see above.)
ssid	SSID for this Virtual AP.
key	Encryption key for this Virtual AP. Prepend with 0x for ascii-hex representation.
MAC	The MAC address, can also use parent-pattern in 5.3.8 and higher: `xx:xx:xx:*:*:xx`
beacon	The beacon interval, in 1kus (1.024 ms), default 100, range: 15..65535
frag_thresh	UN-USED, Was Fragmentation threshold, which is now set with set_wifi_radio, use NA
custom_cfg	Custom hostapd config file, if you want to craft your own config.
max_sta	Maximum number of Stations allowed to join this AP (1..2007)
dtim_period	DTIM period, range 1..255. Default 2.
mode	WiFi mode: see table
flags_mask	If set, only these flags will be considered.
rate	Max rate, see help for add_vsta
x_coord	Floating point number.
y_coord	Floating point number.
z_coord	Floating point number.

ieee80211w	Management Frame Protection: 0: disabled, 1: optional, 2: Required.

Syntax: add_vap shelf resource radio ap_name flags ssid key MAC beacon frag_thresh custom_cfg max_sta dtim_period mode flags_mask rate x_coord y_coord z_coord ieee80211w

49. add_monitor

    Add a WIFI Monitor interface. These are useful for doing low-level wifi packet capturing. Flags are currently defined as:

```
disable_ht40    |           0x800 # Disable HT-40 even if hardware and AP support
disable_ht80    |       0x8000000 # Disable HT80 (for AC chipset NICs only)
ht160_enable    |     0x100000000 # Enable HT160 mode.
be320-enable    | 0x4000000000000 # Enable 320Mhz mode.
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
radio	Name of the physical radio interface, for example: wiphy0
ap_name	Name for this Monitor interface, for example: moni0 [W]
flags	Flags for this monitor interface.
flags_mask	Flags mask for this monitor interface.
aid	AID, may be used when sniffing on /AX radios.
bssid	BSSID to use when sniffing on /AX radios, optional.

Syntax: add_monitor shelf resource radio ap_name flags flags_mask aid bssid

50. add_tm

    Create and add a new test manager to the system. A test manager is a collection of cross-connects that compose a test group. Users can be assigned to these groups and the groups can be password protected. This can be used to more easily share LANforge resources among several users. See Also: tm_register, add_group

Argument	Description
name	The name of the test manager. Must be unique across test managers. [R]

Syntax: add_tm name

51. add_group

Create a new test group. Test groups are used to easily control and script collections of cross-connects. The CX types can be different within the group.

```
group_total_rates | 0x4   # Set rates as total for group.
```

See Also: add_tgcx

Argument	Description
name	The name of the test group. Must be unique across all groups. [R]
flags	Flags for this group, see above.
flags_mask	Mask for flags that we care about, use 0xFFFFFFFF or leave blank for all.

Syntax: add_group name flags flags_mask

52. add_tgcx

    Adds CX to test group. See Also: rm_tgcx, add_group

Argument	Description
tgname	The name of the test group. [R]
cxname	The name of the CX. [R]

Syntax: add_tgcx tgname cxname

53. add_wl_endp

    Add a WanLink (ICE) endpoint to the LANforge Manager. The endpoint may then be added to a cross-connect. If the endpoint already exists, then this command may be used to update the values. Note that you can leave everything after `port` off the command, and default values will be used.

    For CPU thread, the value is only used on the A-endpoint. The B-endpoint is always on the same CPU as the A-endpoint.

    ```
    SHOW_WP | 0x01    # Show WanPaths in wanlink endpoint table in GUI
    ```

Argument	Description
alias	Name of endpoint. [R]
shelf	Shelf name/id. [D:1]
resource	Resource number.
port	Port number or name.
latency	The latency (ms) that will be added to each packet entering this WanLink.
max_rate	Maximum transmit rate (bps) for this WanLink.

description	Description for this endpoint, put in single quotes if it contains spaces.
cpu_id	The CPU/thread that this process should run on (kernel-mode only).
wle_flags	WanLink Endpoint specific flags, see above.

Syntax: add_wl_endp alias shelf resource port latency max_rate description cpu_id wle_flags

54. add_wanpath

    Add a WanPath personality to a WanLink. The WanPath is like a virtual WanLink between a source and destination IP or IP range. For instance, if you want communications between server A and client C to be different from communications between server B and client C, then you can set up two WanPaths to specify that behaviour. If the specified WanPath already exists, this command can be used to modify the existing values

Argument	Description
wanlink	Name of WanLink to which we are adding this WanPath. [R]
alias	Name of WanPath. [R]
speed	The maximum speed this WanLink will accept (bps).
latency	The base latency added to all packets, in milliseconds (or add 'us' suffix for microseconds)
max_jitter	The maximum jitter, in milliseconds (or add 'us' suffix for microseconds)
extra_buffer	The extra amount of bytes to buffer before dropping pkts, in units of 1024, use -1 for AUTO. [D:-1]
reorder_freq	How often, out of 1,000,000 packets, should we make a packet out of order.
drop_freq	How often, out of 1,000,000 packets, should we purposefully drop a packet.
dup_freq	How often, out of 1,000,000 packets, should we purposefully duplicate a packet.
source_ip	Selection filter: Source IP.
source_ip_mask	Selection filter: Source IP MASK.

dest_ip	Selection filter: Destination IP.
dest_ip_mask	Selection filter: Destination IP MASK.
playback_capture	ON or OFF, should we play back a WAN capture file?
playback_capture_file	Name of the WAN capture file to play back.
playback_loop	Should we loop the playback file, YES or NO or NA.
ignore_bandwidth	Should we ignore the bandwidth settings from the playback file? YES, NO, or NA.
ignore_loss	Should we ignore the packet-loss settings from the playback file? YES, NO, or NA.
ignore_latency	Should we ignore the latency settings from the playback file? YES, NO, or NA.
ignore_dup	Should we ignore the Duplicate Packet settings from the playback file? YES, NO, or NA.
jitter_freq	How often, out of 1,000,000 packets, should we apply random jitter.
min_drop_amt	Minimum amount of packets to drop in a row. Default is 1. [D:1]
max_drop_amt	Maximum amount of packets to drop in a row. Default is 1. [D:1]
min_reorder_amt	Minimum amount of packets by which to reorder, Default is 1. [D:1]
max_reorder_amt	Maximum amount of packets by which to reorder, Default is 10. [D:10]
drop_every_xth_pkt	YES to periodically drop every Xth pkt, NO to drop packets randomly.
dup_every_xth_pkt	YES to periodically duplicate every Xth pkt, NO to duplicate packets randomly.
reorder_every_xth_pkt	YES to periodically reorder every Xth pkt, NO to reorder packets randomly.

test_mgr	The name of the Test-Manager this WanPath is to use. Leave blank for no restrictions.
max_lateness	Maximum amount of un-intentional delay before pkt is dropped. Default is AUTO
follow_binomial	YES to have ok/drop burst lengths follow a binomial distribution.

Syntax: add_wanpath wanlink alias speed latency max_jitter extra_buffer reorder_freq drop_freq dup_freq source_ip source_ip_mask dest_ip dest_ip_mask playback_capture playback_capture_file playback_loop ignore_bandwidth ignore_loss ignore_latency ignore_dup jitter_freq min_drop_amt max_drop_amt min_reorder_amt max_reorder_amt drop_every_xth_pkt dup_every_xth_pkt reorder_every_xth_pkt test_mgr max_lateness follow_binomial

55. admin

Various back-door commands. Current supported commands are:

upgrade
Upgrade lanforge using lf_kinstall script currently installed on the LANforge system. Task executes in background and will reboot the LANforge when complete. First argument is resource-id (or ALL) Second argument is lfver, for instance: 5.4.6 Third argument is kfver, for instance: 5.19.17+ Fourth is extra arguments sent to lf_kinstall.pl, leave blank if unsure.

dhcpd
DHCPd event callback, creates event. First argument is network device name Second argument is dhcpd message.

mobile
Mobile phone (hands free) script callback. First argument is endpoint name Second argument is call event type: answered or completed. Third argument is Pesq test file path or peer phone number Fourth argument is mob connection type: BT or cable

resync_clock
Used on windows to force re-sync with the system clock.

write_xorp_cfg [xorp-port]
Re-write out the xorp-config file.

ensure_port [iface-name] [lanforge-iface-idx] [noprobe]
Helper process only.

scan_complete [rslt-file-name] [request-key]
Used by WiFi scan logic.

probe_complete [rslt-file-name] [request-key]
Used by WiFi logic.

ifup_post_complete [iface-name] [message]
Tell LF that ifup script is complete.

flush_complete
Tell resource all initial config has been sent from mgr.

chamber [id] [angle] [flags] [table-speed-rpm]
Chamber helper script callback. Angle is in 1/10 of a degree.

req_migrate [port-eid] [destination-radio] [mac-pattern]
This will attempt to migrate a virtual station to a new radio. Any existing traffic connections will migrate with the station. The station may be renamed, but its MAC address and other configuration will remain the same (unless mac-pattern) is specified, in which case a new MAC will be created). If the destination-radio is not specified, then another radio will be chosen automatically. Example: admin req_migrate 1.2.sta30 1.1.wiphy1 xx:xx:xx:xx:*:xx

rfgen [id] [message]
API for the rfgen process to report status back to LANforge. Parsed messages are: starting, running, stopping, stopped, exiting Any other text will be treated as an error message to be delivered to the user(s).

clean_logs
This will remove all LANforge related log files and restart logging with new log files. This will also reset WiFi radios so that related logs are restarted, so it is fairly disruptive.

log_complete
An asynchronous log-gathering action has completed. Argument 1 is the name of the file.

adb_complete
An asynchronous ADB command has completed. Argument 1 adb-device, arg2 is file-name, arg3 is key
`write_xorp_cfg` only works on 'resource' processes.

Argument	Description
cmd	Admin command: resync_clock | write_xorp_cfg | scan_complete | ifup_post_complete | flush_complete | req_migrate | rfgen | chamber | clean_logs | upgrade | mobile | dhcpd
arg1	Argument 1: xorp-port | scan-rslts-file | iface-name | iface-eid | rfgen-message | id | log_file_name
arg2	Argument 2: scan key | message | angle | dest-radio | adb-filename | lfver | event-id
arg3	Argument 3: noprobe | migrate-sta-mac-pattern | adb-key | kver | event-value-1
arg5	Argument 4: table-speed | extra-upgrade-args | event-value-2

Syntax: admin cmd arg1 arg2 arg3 arg5

56. apply_vr_cfg

Apply all of the virtual routing settings for this Resource. This causes the routing tables to be created and configured properly for the specified configuration. This command should be run after making one or more changes to the virtual routers or virtual router connections. Please note that running this command when there are lots of virtual routers configured can take a long time. Check the status of the Card for percentage complete. Also, while this process is running, you will not be able to configure ports or virtual-router configuration.

Argument	Description
shelf	The number of the shelf in question, or 'ALL'. [R][D:ALL]
resource	The number of the resource in question, or 'ALL'. [W]

Syntax: apply_vr_cfg shelf resource

57. cancel_vr_cfg

    Setting up virtual router configurations can take a long time when there are lots of virtual routers. This command can cancel a configuration process before it is complete. Please note: the routing tables will be in an un-determined state after this, until you re-run the virtual router setup.

Argument	Description
shelf	The number of the shelf in question, or 'ALL'. [R][D:ALL]
resource	The number of the resource in question, or 'ALL'. [W]

Syntax: cancel_vr_cfg shelf resource

58. clear_cx_counters

    Clear counters for one or all cross-connects.

```
PORTS_TOO   | 0x01    # Clear port counters this CX uses as well.
SEND_EVENT  | 0x02    # Send event when clearing counters.
```

Argument	Description
cx_name	Name of Cross Connect, or 'all'. Null argument is same as 'all'. [W][D:all]
clear_flags	Optional argument to control clear logic.

Syntax: clear_cx_counters cx_name clear_flags

59. clear_endp_counters

    Clear counters for one or all endpoints. just_lat: If YES, then just clear latency counters. just_lat: If RXGAP, then just clear the rxgap counters (5.4.2 and higher releases) Otherwise, all counters will be cleared.

```
PORTS_TOO   | 0x01    # Clear this endpoint's port counters as well.
SEND_EVENT  | 0x02    # Send event when clearing counters.
```

Argument	Description
endp_name	Name of Endpoint, or 'all'. Null argument is same as 'all'. [W][D:all]
just_latency	Enter 'YES' if you only want to clear latency counters, and see above for RXGAP.
incr_seqno	Enter 'YES' if you want the target to increment the cfg-seq-no.
clear_flags	Optional argument to control clear logic. Ignored if just_latency is specified.

Syntax: clear_endp_counters endp_name just_latency incr_seqno clear_flags

60. clear_cd_counters

    Clear counters for one or all Collision Domains.

Argument	Description
cd_name	Name of Collision Domain, or 'all'. Null argument is same as 'all'. [W][D:all]

Syntax: clear_cd_counters cd_name

61. clear_group

    Clears all cross-connects in a test group See Also: add_group, add_tgcx, stop_group

```
PORTS_TOO   | 0x01    # Clear this endpoint's port counters as well.
SEND_EVENT  | 0x02    # Send event when clearing counters.
```

Argument	Description
name	The name of the test group. [W]

Syntax: clear_group name

62. clear_port_counters

    Clear counters on one or all ports on one or all resources. If `extra` is set to one of the below DHCP options, then counters will not be cleared, but the DHCP objects in question will be cleared. If DHCP is running, it will be stopped before clearing, and then restarted.

```
dhcp4_lease     |# Remove dhcp lease files for IPv4 DHCP
dhcp6_lease     |# Remove dhcp lease files for IPv6 DHCP
dhcp_leases     |# Remove dhcp lease files for IPv4 and IPv6 DHCP
```

Argument	Description
shelf	The number of the shelf in question, or 'ALL'. [R][D:1]
resource	The number of the resource in question, or 'ALL'. [W]
port	The number of the port in question, or 'ALL'. [W]
extra	Clear something else instead: dhcp4_lease | dhcp6_lease | dhcp_leases

Syntax: clear_port_counters shelf resource port extra

63. clear_resource_counters

    Clear counters on one or all resources.

Argument	Description
shelf	The number of the shelf in question, or 'ALL'. [R][D:1]
resource	The number of the resource in question, or 'ALL'. [W]

Syntax: clear_resource_counters shelf resource

64. clear_wifi_profiles

    This will clear wifi profiles from the device in question. Initial use is for ADB devices, probably will want to do similar for other 'real' devices in the future.

Argument	Description
shelf	Shelf number, or ALL. [R][D:1]
resource	Resource number, or ALL. [W]
type	Object type: adb, or ALL.
id	Object identifier: adb-id, or ALL.
except_ssid	Do not delete profiles that reference this SSID, NA deletes all.

Syntax: clear_wifi_profiles shelf resource type id except_ssid

65. clear_wp_counters

    Clear WanPath counters for one endpoint.

Argument	Description
endp_name	Name of WanLink Endpoint. [W]
wp_name	Name of WanPath to clear.

Syntax: clear_wp_counters endp_name wp_name

66. discover

    Force discovery of nodes on the management network. Note that discovery runs automatically about every minute. option argument: Set to 'disconnect' to force disconnect to remote resource process. Set to 'adb' for ADB device discovery.

Argument	Description
shelf	Shelf-ID, only used if discovering Attenuators. [R][D:1]
resource	Resource ID. Use if discovering Attenuators or ADB devices. [W]
option	See above.

    Syntax: discover shelf resource option

67. diag

    This command prints out information that can be used by support staff to diagnose certain issues.

    Diagnostic Types:

```
NA          |# everything (default)
alerts      |# alert messages
license     |# license contents
counters    |# endpoint counters
fds         |# file descriptors
clients     |# connected clients
endpoints   |# list of endpoints
shelf       |#
iobuffer    |#
```

Argument	Description
type	Default (blank) is everything, options: alerts, license, counters, fds, clients, endpoints, shelf, iobuffer.
arg1	Optional: Endpoint name to diag.

    Syntax: diag type arg1

68. notify_dhcp

    Handle input from the DHCP client process. This should not normally be called by users, but only by other LANforge processes. This always assumes local shelf/card, so they are not specified.

Argument	Description

cmd	set/down/timeout/info: What does DHCP want us to do? [W]
port	Interface name. [W]
reason	DHCP reason, informational mostly.
new_ip	New IP address.
netmask	New subnet mask.
new_mtu	New MTU.
new_router	One or more default routers. LANforge will only use the first one.
new_dns	New DNS server(s) for use by this interface.
new_ip6	New Global IPv6 address: ipv6/prefix

Syntax: notify_dhcp cmd port reason new_ip netmask new_mtu new_router new_dns new_ip6

69. do_pesq

    This command starts a PESQ calculation for the results saved by a VOIP endpoint. This command is usually used internally by LANforge so it is unlikely you will ever use it directly. The LANforge system will determine the source file (which must exist on the receiving machine in the same place it does on the transmitting machine) and send a request to the LANforge PESQ server to compare the source to the result file specified in this command.

    The results will be associated with the VOIP endpoint and may be displayed with the `show_pesq` command

Argument	Description
endp_name	Name of Endpoint. [W]
result_file_name	The name of the file received by the endpoint. [W]

Syntax: do_pesq endp_name result_file_name

70. file

    Transfer files through LANforge API. This will include upload and download.

    This command creates a prompt on the connected GUI. This command does not transfer files via JSON protocol.

```
UNLINK_WHEN_DL_COMPLETE | 0x01     # Remove the file once it has been downloaded.
```

Argument	Description
shelf	Shelf ID [R][D:1]
card	Resource ID [W]

cmd	Only 'Download' supported for now, 'Upload' reserved for future use. [W][D:Download]
filename	File to transfer. [W]
req_id	Request identifier, uint32. Will be passed back in response frames.
client_id	Internal use only.
flags	Options for the file operation, see above.

Syntax: file shelf card cmd filename req_id client_id flags

71. gossip

    Send a message to everyone else logged in to the server.

Argument	Description
message	Message to show to others currently logged on. `Unescaped Value` [W]

Syntax: gossip message

72. getintxrate

    Get the tx rate (packets per second) over the last 3 seconds. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: InTxRate=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: getintxrate CX AorB

73. getinrxrate

    Get the rx rate (packets per second) over the last 3 seconds. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: InRxRate=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: getinrxrate CX AorB

74. getinrxbps

    Get the rx bits-per-second rate over the last 3 seconds. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: InRxBps=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

    Syntax: getinrxbps CX AorB

75. gettxpkts

    Get the total tx packets count. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: TxPkts=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

    Syntax: gettxpkts CX AorB

76. getrxpkts

    Get the total rx packets count. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: RxPkts=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

    Syntax: getrxpkts CX AorB

77. getpktdrops

    Get the total packets dropped. The drops will be detected by sequence number gaps, and will be based on packets RECEIVED by this endpoint. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: PktDrops=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]

AorB	For AtoB, enter 'B', for BtoA, enter 'A'.

Syntax: getpktdrops CX AorB

78. getavglatency

    Get the average latency (over the last 30 seconds) for packets received by and endpoint. Values will always be fresh (cached values are not used). Value will be an integer, units are milliseconds.

    Response: AvgLatency=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]
AorB	For AtoB, enter 'B', for BtoA, enter 'A'.

    Syntax: getavglatency CX AorB

79. getrxporterrpkts

    Get the total error packets detected on the receiving port (interface). The errors will be based on what is reported by the driver and/or hardware for this interface. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: RxPortErrPkts=INTEGER

Argument	Description
CX	Cross-connect name [W]
AorB	For AtoB, enter 'B', for BtoA, enter 'A'.

    Syntax: getrxporterrpkts CX AorB

80. getrxendperrpkts

    Get the total error packets detected on the receiving endpoint. The errors will be the sum of things like CRC errors, packets received on the wrong device, and any other errors we can detect for this particular endpoint. Values will always be fresh (cached values are not used). Value will be an integer.

    Response: RxEndpErrPkts=INTEGER

Argument	Description
CX	Cross-connect or Test-Group name [W]
AorB	For AtoB, enter 'B', for BtoA, enter 'A'.

    Syntax: getrxendperrpkts CX AorB

81. getipadd

Get the IP for the endpoint. Value will be cached (but IP addresses do not often change, so the result should almost always be immediately correct.) Response: IPAdd=xxx.xxx.xxx.xxx

Argument	Description
CX	Cross-connect name [W]
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: getipadd CX AorB

82. getmask

    Get the IP Mask for the endpoint. Value will be cached (but IP addresses do not often change, so the result should almost always be immediately correct.) Response: Mask=xxx.xxx.xxx.xxx

Argument	Description
CX	Cross-connect name
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: getmask CX AorB

83. getmac

    Get the MAC address for the endpoint. Value will be cached (but IP addresses do not often change, so the result should almost always be immediately correct.) Response: MAC=aa:bb:cc:dd:ee:ff

Argument	Description
CX	Cross-connect name [W]
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: getmac CX AorB

84. ?

    Show help for commands(s). If no command is specified, then a brief listing of all commands will be printed out. If a command is specified, then a verbose printing of that command will be printed.

Argument	Description
command	The command to get help for. Can be 'all', or blank.

Syntax: ? command

85. init_wiser

    Initialize the Wiser NCW/HNW module. This requires that one have the proper library installed. Contact sales@candelatech.com if you have questions. If the file_name has spaces in it, be sure to enclose it in double quotes.

Argument	Description
shelf	The number of the shelf in question. [R][D:1]
resource	The number of the resource in question. [W]
file_name	The WISER file name for the desired emulation, or 'NA' for empty string.
node_count	The number of WISER nodes for the desired emulation, or 'NA' for empty string.

Syntax: init_wiser shelf resource file_name node_count

86. ios

    For IPC - SwiftUI sending information to BTSERVER

    Operations are defined as follows. - setresourceinfo - devicestats - urlreport

Argument	Description
cmd	Operation that device is requesting
arg1	arg1
arg2	arg2
arg3	arg3
arg4	arg4
arg5	arg5
arg6	arg6
arg7	arg7
arg8	arg8
arg9	arg9
arg10	arg10
arg11	arg11
arg12	arg12
arg13	arg13
arg14	arg14
arg15	arg15
arg16	arg16
arg17	arg17
arg18	arg18
arg19	arg19
arg20	arg20

Syntax: ios cmd arg1 arg2 arg3 arg4 arg5 arg6 arg7 arg8 arg9 arg10 arg11 arg12 arg13 arg14 arg15 arg16 arg17 arg18 arg19 arg20

87. licenses

    Print out license information. See also: set_license

Argument	Description

popup	If 'popup', then cause a GUI popup msg, otherwise, just show text.
show_file	If 'yes', then show the license file, not the parsed license information.

Syntax: licenses popup show_file

88. load

This command will completely erase the current setup in memory and replace it with the database specified with this command. You must specify a database to be loaded, though note that if you specify a database that does not exist, and chose 'overwrite', you will effectively initialize the LANforge system to defaults. The default database is called: DFLT

Argument	Description
name	The name of the database to load. (DFLT is the default) [W]
action	Should be 'append' or 'overwrite'. [W]
clean_dut	If yes, then DUT will be cleaned up when overwrite is selected, otherwise they will be kept.
clean_chambers	If yes, then Chambers will be cleaned up when overwrite is selected, otherwise they will be kept.
clean_profiles	If yes, then clean all profiles when overwrite is selected, otherwise they will be kept.

Syntax: load name action clean_dut clean_chambers clean_profiles

89. login

If you are the first to use this name, a new client will be created for you. If this is an existing client account, then you take on the characteristics of that client. At this time, that is only a few flags. If the password is set for this client, and the password given here is invalid, the client will not be logged in as the new user. See set_password to modify the password.

Argument	Description
name	A single name with no white-spaces (15 characters or less) [W]
password	Can be blank or 'NA' if no password is set, otherwise must be the password.

Syntax: login name password

90. create_client

    Create a new client (user).

Argument	Description
name	A single name with no white-spaces (15 characters or less) [W]
password	Can be blank or 'NA' if no password is set, otherwise must be the password. Use IGNORE for no change.
super_user	1 If you want this user to have Administrative powers, 0 or blank otherwise.

    Syntax: create_client name password super_user

91. log_capture

    Save log files to a specified location, useful for gathering stuff for automated testing.

```
adb          |#
journalctl   |#
hostapd      |#
lflogs       |#
supplicant   |#

async_feedback | %{user_key}
```

    adb
    Android ADB logs.
    identifier: adb device id
    duration: 'all' means entire file, a number X in seconds grabs last 'x' seconds of logs. This can take a while, so it is done asynchronously. A keyed message even will be sent when the log is complete.

    hostapd
    Logs from hostapd (VAP).
    identifier: vap port name *duration*: 'all' means entire file, a number X in seconds grabs last 'x' seconds of logs.

    journalctl
    System and kernel logs.
    identifier: NA
    duration: 'boot' means since boot, other values are passed to --since argument of journalctl, so use things like: '10 minutes ago'

    lflogs
    LANforge manager (resource 0) or resource (resource 1+) logs.
    identifier: NA
    duration: 'all' means entire file, a number X in seconds grabs last 'x' seconds of logs.

supplicant

Logs from wpa_supplicant (STA ports)
identifier: port (wifi radio) name
duration: 'all' means entire file, a number X in seconds grabs last 'x' seconds of logs.

Argument	Description
shelf	The number of the shelf in question. [R][D:1]
resource	The number of the resource in question. [W]
type	journalctl, supplicant, lflogs, adb, hostapd [W]
identifier	port name or other identifier needed for some types, NA if not used.
duration	For journalctl, seconds of logs to gather, or NA if not used.
destination	Where to save the file to on the LANforge resource. If 'stdout', then content will be passed back as a keyed text message. [R]
user_key	Key to use for keyed-text-message response when using stdout destination [W]

Syntax: log_capture shelf resource type identifier duration destination user_key

92. log_level

Sets the logging level for the primary log stream. The values are bit-fields: add them together to get the desired level. If you enter log_level by itself, then you can see the current level.

If the second argument exists, it will apply to the entity specified. Without an argument it just modifies the local server in general.

You can enter the value in HEX if you prefix it with `0x`.

```
DIS       | 0x1         # disasters                (1)
ERR       | 0x2         # errors                   (2)
WRN       | 0x4         # warnings                 (4)
INF       | 0x8         # info                     (8)
TRC       | 0x10        # function trace           (16)
DBG       | 0x20        # debug                    (32)
SEC       | 0x40        # log security violations  (64)
DB        | 0x80        # Database related logging (128)
XMT       | 0x100       # Output going to clients  (256)
SCRIPT    | 0x400       # Scripting specific stuff (1024)
PARSE     | 0x800       # PARSE specific           (2048)
DBG2      | 0x1000      # very verbose logging     (4096)
LIO       | 0x2000      # IO logging               (8192)
OUT1      | 0x4000      # Some std-out logging     (16384)
```

```
LL_PROF    | 0x8000      # Profiling information    (32768)
CUST1      | 0x10000     # Cust-1, latency info     (65536)
ALL        | 0xFFFFFFFF  # Log everything
```

Argument	Description
level	Integer corresponding to the logging flags. [W]
target	Options: 'gnu' | [file-endp-name].

Syntax: log_level level target

93. log_msg

    Send an message to the LANforge log file.

Argument	Description
message	Message to log. `Unescaped Value` [W]

Syntax: log_msg message

94. motd

    This command prints out alerts and other info that may be useful for debugging LANforge configuration problems.

Syntax: motd

95. nc_show_endpoints

    Show one or all endpoints. Will NOT use cached values. Some endpoint types take an extra argument to specify what to show more precisely: Generic endpoints check extra for 'history' and in that case they will report recent output, not just the last line of output.

Argument	Description
endpoint	Name of endpoint, or 'all'. [W]
extra	See above.

Syntax: nc_show_endpoints endpoint extra

96. nc_show_pesq

    Show PESQ results for one or all VOIP endpoints. Will NOT use cached values.

Argument	Description
endpoint	Name of endpoint, or 'all'. [W]

Syntax: nc_show_pesq endpoint

97. nc_show_ports

Show one/all ports for one/all resources in one/all shelves. This command WILL NOT use cached values, so it will be a little slower. It is useful for scripts and situations where the 3-5 second caching is to slow to yield the results needed.

Probe-Flags options:

```
WIFI              | 0x1       # 1 include wifi stations
MII               | 0x2       # 2 include MII
ETHTOOL           | 0x4       # 4 include ethtool results
BRIDGE            | 0x8       # 8 include bridges
EASY_IP_INFO      | 0x10      # 16 Everything but gateway information, which is
GW                | 0x20      # 32 include gateway information
GW_FORCE_REFRESH  | 0x40      # 64 Force GW (re)probe.  Otherwise, cached values
```

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
port	Port number, or 'all'. [W]
probe_flags	See above, add them together for multiple probings. Leave blank if you want stats only.

Syntax: nc_show_ports shelf resource port probe_flags

98. c_show_ports

Show one/all ports for one/all resources in one/all shelves. This command will ALWAYS use cached values, so it may return stale values. It is useful when the system cannot return non-cached values due to timeouts, and perhaps for configuration information that does not need to be probed.

Probe-Flags options:

```
WIFI              | 0x1       # 1 include wifi stations
MII               | 0x2       # 2 include MII
ETHTOOL           | 0x4       # 4 include ethtool results
BRIDGE            | 0x8       # 8 include bridges
EASY_IP_INFO      | 0x10      # 16 Everything but gateway information, which is
GW                | 0x20      # 32 include gateway information
GW_FORCE_REFRESH  | 0x40      # 64 Force GW (re)probe.  Otherwise, cached values
```

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
port	Port number, or 'all'. [W]
probe_flags	See above, add them together for multiple probings. Leave blank if you want stats only.

Syntax: c_show_ports shelf resource port probe_flags

99. nc_show_channel_groups

    Show one/all ChannelGroups for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. Will always request the absolute latest information from the remote system(s)

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
channel_name	Name of the channel, or 'all'. [W]

Syntax: nc_show_channel_groups shelf resource channel_name

100. nc_show_spans

    Show one/all Spans for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. Will always request the absolute latest information from the remote system(s)

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
span_number	Span-Number of the span, or 'all'. [W]

Syntax: nc_show_spans shelf resource span_number

101. nc_show_vr

    Show one/all Virtual Routers for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. This command will always request the absolute latest information from the remote system(s)

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
router	Name of the Virtual Router, or 'all'. [W]

Syntax: nc_show_vr shelf resource router

102. nc_show_vrcx

    Show one/all Virtual Router Connections for one/all resources in one/all shelves. Only Connections on the 'free-list', those not associated with any Virtual Router will be shown with this command unless you exactly specify the

VRCX Name. If the VRCX is in a virtual router, only cached results will be shown. Connections associated with routers will be shown whith the 'show_vr' command with the rest of the router information. This command will always request the absolute latest information from the remote system(s)

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
cx_name	Name of the Virtual Router Connection, or 'all'. [W]

Syntax: nc_show_vrcx shelf resource cx_name

103. nc_show_cd

Show one/all Collision Domains for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. This command will always request the absolute latest information from the remote system(s)

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
collision_domain	Name of the Collision Domain, or 'all'. [W]

Syntax: nc_show_cd shelf resource collision_domain

104. nc_show_ppp_links

Show one/all PPP Links for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
link_num	Ppp-Link number of the span, or 'all'. [W]

Syntax: nc_show_ppp_links shelf resource link_num

105. probe_port

This calls various command-line tools to probe the port and returns the results as a text message. This command will trigger a popup message in the LANforge client. To disable that popup, append the key `probe_port.quiet.[EID]` where EID is the Shelf, Resource, and ID of the port being probed. E.G.:

```
probe_port 1 1 br0 probe_port.quiet.1.1.3
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Port number or name [W]
key	Unique identifier for this request. Usually left blank. Use 'probe_port.quiet.[EID]' to suppress popup.

Syntax: probe_port shelf resource port key

106. probe_ports

Check for the existence of new (virtual) interfaces.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]

Syntax: probe_ports shelf resource

107. port_reset_completed

Internal command used by port-reset script to notify LANforge the reset has completed. This is only valid for Resource processes.

Argument	Description
port	The port in question. [W]
type	SUNOS, NORMAL, or SECIP..let us know what kind of reset completed.
extra	IP for SECIP, blank for others.

Syntax: port_reset_completed port type extra

108. exit

Log out of the LANforge control server.

Syntax: exit

109. report

Configure server side reporting. This is useful if you want the LANforge-Manager to save reports instead of the LANforge-GUI.

Argument	Description
rpt_dir	Directory in which reports should be saved. [W]

reporting_on	Should we globally enable/disable reporting. (YES, NO or NA)
save_endps	Should we save endpoint reports or not. (YES, NO or NA)
save_resource	Should we save Resource reports or not. (YES, NO or NA)
save_ports	Should we save Port reports or not. (YES, NO or NA)

Syntax: report rpt_dir reporting_on save_endps save_resource save_ports

110. reset_port

This command will cause the driver on the selected ports to reset the driver (admin down, admin up). It will also re-initialize all of the routing information for that interface. This command will disrupt traffic, but it can be useful if the port locks up or if you wish to restart higher level services (such as dhcp and supplicant for wifi). See the user-guide section on setting up IP addresses and routing for more information.

Do not override the default of `YES` for `reset_ospf` unless you are certain that is the right thing to do.

The `pre_ifdown` field controls portal login/logout activity and may not actually cause the lower-level driver information to be reset. If left blank or set to `NA`, then the port will be reset as described above (and any existing ifdown/up scripts will be aborted), and the portal logout script will not be called. Basic options are as follows:

```
YES      |  # (include logout) Call portal-bot.pl ... --logout before going down
P-OUT    |  # Only call the portal logout (do not reset drivers/supplicant/dhcp)
P-IN     |  # Only call the portal login (do not reset drivers/supplicant/dhcp)
```

Argument	Description
shelf	Shelf number, or ALL. [R][D:1]
resource	Resource number, or ALL. [W]
port	Port number to reset, or ALL. [W]
reset_ospf	If set to 'NO' or 'NA', then OSPF will not be updated. Otherwise, it will be updated.
pre_ifdown	See above. Leave blank or use NA if unsure.

Syntax: reset_port shelf resource port reset_ospf pre_ifdown

111. reset_serial_span

This command will cause the Serial Span (T1, etc) driver to be reloaded. This may help work around bugs in the T1 driver and/or hardware.

Argument	Description
shelf	Shelf number [R][D:1]
resource	Resource (machine) number. [W]
span	Serial-Span number to reset. [W]

Syntax: reset_serial_span shelf resource span

112. reboot_os

This will reboot the Operating System on the resource specified. All processes will be killed on that resource, of course. Upon reboot, server processes will be re-started, including the LANforge server. See also: reboot_OS

Argument	Description
shelf	Shelf number, or ALL. [R][D:1]
resource	Resource number, or ALL. [W]

Syntax: reboot_os shelf resource

113. rm_attenuator

Argument	Description
shelf	Shelf number, usually 1 [R][D:1]
resource	Resource number [W]
serno	Serial number for requested Attenuator. [W]

Syntax: rm_attenuator shelf resource serno

114. rm_chamber

Argument	Description
chamber	Chamber name, or 'ALL' [W]

Syntax: rm_chamber chamber

115. rm_chamber_path

Remove one or all chamber paths from a chamber.

Argument	Description
chamber	Chamber Name. [W]
path	Path Name, use 'ALL' to delete all paths. [W]

Syntax: rm_chamber_path chamber path

116. rm_dut

Argument	Description
shelf	DUT name, or 'ALL' [W]

Syntax: rm_dut shelf

117. rm_rfgen

Argument	Description
shelf	Shelf number, usually 1 [R][D:1]
resource	Resource number [W]
ID	RF Generator ID (serial-number) [W]

Syntax: rm_rfgen shelf resource ID

118. rm_cd

Remove a Collision Domain. Any endpoints still associated with this CD will be gracefully removed from the CD, but will not otherwise be affected.

Argument	Description
cd	Name of Collision Domain. [W]

Syntax: rm_cd cd

119. rm_cd_endp

Remove an Endpoint from a Collision Domain.

Argument	Description
cd	Name of Collision Domain. [W]
endp	Endpoint name/id. [W]

Syntax: rm_cd_endp cd endp

120. rm_cd_vr

Remove a Virtual Router from a Collision Domain.

Argument	Description
cd	Name of Collision Domain. [W]
endp	Virtual-Router name/id. [W]

Syntax: rm_cd_vr cd endp

121. rm_endp

Remove an endpoint. 'YES_ALL' for endp-name will delete all endpoints.

Related Commands

`postexec_cli`	`nc_show_endp all`
`preexec_method`	`baseCheckEndpExists`

Argument	Description
endp_name	Name of the endpoint, or 'YES_ALL'. [W]

Syntax: rm_endp endp_name

122. rm_channel_group

Remove a channel group, or set of groups.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
channel_name	Name of the channel, or 'all'. [W]

Syntax: rm_channel_group shelf resource channel_name

123. rm_event

Argument	Description
event_id	Numeric event-id, or 'all' [W]

Syntax: rm_event event_id

124. rm_group

Deletes a test group. See Also: add_group, rm_tgcx

Argument	Description
name	The name of the test group. [W]

Syntax: rm_group name

125. rm_profile

Remove Device Profile configuration.

Argument	Description
name	Profile name, or 'ALL' [W]

Syntax: rm_profile name

126. rm_text_blob

Remove Text Blob.

Argument	Description
type	Text Blob type, or 'ALL' [W]
name	Text Blob Name, or 'ALL' [W]

Syntax: rm_text_blob type name

127. rm_traffic_profile

Remove Traffic Profile configuration.

Argument	Description
name	Profile name, or 'ALL' [W]

Syntax: rm_traffic_profile name

128. rm_threshold

Remove a threshold-alert for a particular endpoint.

Argument	Description
endp	Endpoint name or ID. [W]
thresh_id	Threshold ID to remove. Use 'all' to remove all. [W]

Syntax: rm_threshold endp thresh_id

129. rm_tgcx

Removes CX from test group. See Also: add_tgcx, add_group

Argument	Description
tgname	The name of the test group. [W]
cxname	The name of the CX. [W]

Syntax: rm_tgcx tgname cxname

130. rm_venue

Remove a venue

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number, or 'ALL' [W]
venu_id	Number to uniquely identify this venue on this resource, or 'ALL' [W]

Syntax: rm_venue shelf resource venu_id

131. rm_vr

Remove one or all Virtual Routers.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
router_name	Virtual Router name, or 'all'. [W]

Syntax: rm_vr shelf resource router_name

132. rm_vrcx

Remove one or all Virtual Router Connections on the free-list. Underlying objects will be deleted if they were auto-created to begin with unless you specify the last argument as 'vrcx_only'.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
connection_name	Virtual Router Connection name, or 'all'. [W]
vrcx_only	If we should NOT delete underlying auto-created objects, enter 'vrcx_only' here, otherwise leave blank or use NA.
vr_id	If not removing from the free-list, then supply the virtual-router name/ID here. Leave blank or use NA for free-list.

Syntax: rm_vrcx shelf resource connection_name vrcx_only vr_id

133. rm_span

Remove a Serial Span (T1, etc), or a set of spans.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
span_num	Span-Number of the channel, or 'all'. [W]

Syntax: rm_span shelf resource span_num

134. rm_ppp_link

Remove a PppLink.

Argument	Description
shelf	Name/id of the shelf. [R][D:1]
resource	Resource number that holds this PppLink. [W]
unit_num	Unit-Number for the PppLink to be deleted. [W]

Syntax: rm_ppp_link shelf resource unit_num

135. rm_client

Delete a stored client profile. The client cannot be logged on currently. Changes will not be permanent until you write out the database. The client will be removed from all test managers as well.

Argument	Description
client_name	Name of the client profile you wish to remove. [W]
client_password	Client password. Not required if we are super-user.

Syntax: rm_client client_name client_password

136. rm_cx

Delete a cross-connect from the system.

Related Commands

`preexec_method`	`baseCheckCxExists`
`postexec_cli`	`show_cx all`

Argument	Description
test_mgr	Name of test-mgr, or 'all'. [W]
cx_name	Name of the cross-connect, or 'all'. [W]

Syntax: rm_cx test_mgr cx_name

137. rm_wanpath

Remove one or all wanpaths from an endpoint.

Argument	Description
endp_name	Name of the endpoint. [W]
wp_name	Name of the wanpath. [W]

Syntax: rm_wanpath endp_name wp_name

138. rm_db

Delete a database.

Argument	Description
db_name	Name of the database to delete. [W]

Syntax: rm_db db_name

139. rm_resource

Remove a phantom Resource and all of its configuration.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]

Syntax: rm_resource shelf resource

140. rm_sec_ip

Remove secondary IP Address(es).

Related Commands

`preexec_method`	`baseCheckPortExists`
`postexec_cli`	`nc_show_ports %{shelf} %{resource} %{port}`

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of network device (Port) from which these IPs will be removed. [W]
ip_list	IP1/prefix,IP2/prefix,...IPZ/prefix, or ALL [W]

Syntax: rm_sec_ip shelf resource port ip_list

141. rm_vlan

Remove an 802.1Q VLAN or MAC-VLAN.

Related Commands

`preexec_method`	`baseCheckPortExists`
`postexec_cli`	`nc_show_ports %{shelf} %{resource} all`

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Port number or name of the virtual interface. [W]

Syntax: rm_vlan shelf resource port

142. rm_test_mgr

Remove a test manager. Cross-connects will not be directly affected. There is no need to un-register clients first: This command will take care of that for you.

Argument	Description
test_mgr	Name of the test manager to be removed. [W]

Syntax: rm_test_mgr test_mgr

143. save

This command allows you to save the current test configuration, including all Endpoints, and all TestManagers. You may then use the 'load' command to initialize the LANforge Manager with the previously saved database. If you do not specify a name, it will be saved as the default database (DFLT), and will be automatically loaded at startup.

Argument	Description
db_name	The name the backup shall be saved as (blank means dflt)

Syntax: save db_name

144. scan_wifi

Scan for WiFI access points. Only works for WiFI Virtual Station Interfaces (Virtual STA). The `extra` argument allows some control over how the scan is done:

```
NA                  |  # (or left blank) the system does a full scan
dump                |  # then only cached values are returned
trigger freq [freq] |  # scan exactly those frequencies
```

Example of scanning multiple frequencies:

```
scan 1 1 sta1 NA 'trigger freq 5180 5300'
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Port number or name of the virtual interface. [W]
key	Unique identifier for this request. Usually left blank.
extra	Extra arguments to the scan script, see above.

Syntax: scan_wifi shelf resource port key extra

145. set_arm_info

Set Armageddon Endpoint configuration. You may enter `AUTO` for any value that you wish LANforge to calculate for you or set to defaults. Note that randomizing many of these values will mean packets may not be received on the receiving port due to routing or switching issues.

If `multi_pkts` is set to a value greater than 1, that number of identical packets will be sent before creating a new packet. This can significantly increase performance, but at the cost of not having as much accuracy when calculating latency values. It will also cause the 'duplicate packet' to increment.

Armageddon-flags are as follows:

```
rel_tstamp      | 0x400     # Use Relative Timestamps.  This will increase perfor
                            # but can only work if the 'TSC' clock is stable and
                            # endpoints are on the same machine.  It is difficult
                            # the code to know if the TSC is stable or not, so we
                            # verify this for you at this time.

use_gw_mac      | 0x1000    # Use default gateway's MAC for destination MAC.
                            # Dest-MAC must  also be set to 'DEFAULT' for
                            # this option to take effect.

slow_start      | 0x2000    # Use slow-start logic.  This ramps up
                            # the speed a bit slower when
                            # starting the endpoint and after a clear of its stat
                            # With this disabled (the default value), the endpoin
                            # may over-shoot the desired bandwidth for a fractior
                            # of a second causing un-expected stress on the
                            # network under test.

udp_checksum    | 0x4000    # Use UDP Checksums.
use_tcp         | 0x8000    # Use TCP instead of UDP protocol. (Note this is NOT
random_payload  | 0x10000   # Use random payload sizes instead of linear increase
                            # between min and max (release 5.3.6+)
```

Argument	Description
name	Name of the Endpoint we are setting. [R]
min_pkt_size	Minimum packet size, including all Ethernet headers (but not CRC).
max_pkt_size	Maximum packet size, including all Ethernet headers (but not CRC).
udp_src_min	Minimum source UDP port.
udp_src_max	Maximum source UDP port.
udp_dst_min	Minimum destination UDP port.
udp_dst_max	Minimum destination UDP port.
ip_src_min	Minimum source IP address to use.
ip_src_max	Maximum source IP address to use.
ip_dst_min	Minimum destination IP address to use.

ip_dst_max	Maximum destination IP address to use.
src_mac_count	How many source MACs to iterate through.
dst_mac_count	How many destination MACs to iterate through.
src_mac	The source MAC address.
dst_mac	The destination MAC address.
multi_pkts	The number of identical packets to send before creating a new one.
pkts_to_send	The number of packets to send. Set to zero for infinite.
arm_flags	Armageddon-related flags, see above for details.
burst	Burst amount, can significantly improve throughput with some modern drivers, similar to 'multi_pkts', and uses the 'xmit_more' linux skb option.

Syntax: set_arm_info name min_pkt_size max_pkt_size udp_src_min udp_src_max udp_dst_min udp_dst_max ip_src_min ip_src_max ip_dst_min ip_dst_max src_mac_count dst_mac_count src_mac dst_mac multi_pkts pkts_to_send arm_flags burst

146. set_attenuator

Set attenuation value on specified attenuator module. Units are 1/10 of a dB (ddB). To start/stop the Attenuator, which really only makes sense when using scripts on the Attenuator, set attenuator-index to 'all', and 'val' to START or STOP

Attenuator Mode:

```
0 |# Normal
1 |# Pulse mode (API Tech 4205A modules directly connected via USB only)
```

Argument	Description
shelf	Shelf number, usually 1. [R][D:1]
resource	Resource number. [W]
serno	Serial number for requested Attenuator, or 'all'. [W]
atten_idx	Attenuator index, or 'all'. [W]
val	Requested attenution in 1/10ths of dB (ddB). START, STOP will operate an attenuator script

mode	0 == normal attenuator, 1 == pulse mode (API Tech 4205A modules directly connected via USB only)
pulse_width_us5	Pulse width in units of 1/2 micro second. So, if you want 1.5us, use value 3 (0-60000)
pulse_interval_ms	Time between pulses, in miliseconds (0-60000).
pulse_count	Number of pulses (0-255)
pulse_time_ms	Time interval between pulse groups in miliseconds (1-60000)
atten_count	For cases where we are creating/setting a phantom attenuator.
ip_addr	IP address, in case this Attenuator is to be managed over TCP.

Syntax: set_attenuator shelf resource serno atten_idx val mode pulse_width_us5 pulse_interval_ms pulse_count pulse_time_ms atten_count ip_addr

147. set_rfgen

Set RF Noise-generator (RADAR) config.

```
running       |  0x2  # Should we start the RF Generator or not?
one-burst     |  0x8  # Run for about 1 second and stop.  Uses 5-sec sweep time
trials-low    | 0x10  # FCC5 enable trials-low
trials-center | 0x20  # FCC5 enable trials-center
trials-high   | 0x40  # FCC5 enable trials-high
```

Radar-Type:

FCC0: 0 # Uses pulse-width, pulse-interval, pulse-count

FCC1: 1 # Uses pulse-width, pulse-interval, pulse-count

FCC2: 2 # Uses pulse-width, pulse-interval, pulse-count

FCC3: 3 # Uses pulse-width, pulse-interval, pulse-count

FCC4: 4 # Uses pulse-width, pulse-interval, pulse-count

FCC5: 5 # Uses num-bursts, trials-center, trials-low, trials-high, uut-channel, freq-modulation

FCC5B: 6 # Uses burst-offset, pulse-width, chirp-freq-modulation, prf-1, prf-2, prf-3, pulse-count, uut-channel, carrier-freq

FCC6 7 # num-bursts (configured with 'pulse_count' field)

ETSI1: 8 # Uses pulse-width, prf-1

ETSI2: 9 # Uses pulse-width, prf-1

ETSI3: 10 # Uses pulse-width, prf-1

ETSI4: 11 # Uses pulse-width, prf

ETSI5: 12 # Uses pulse-width, prf-1, prf-2, prf-3

ETSI6: 13 # Uses pulse-width, prf-1, prf-2, prf-3

W53PULSE: 14 # Uses pulse-width, prf, number-of-pulses

W53CHIRP: 15 # Uses pulse-width, pri, long-pulse, chirp-width, prf, num-continuous-pairs, center-freq

GENERIC: 16 # Uses pulse-width, pulse-interval, pulse-count

OFDM: 17 # Modulated wifi signal. Uses duration, header-modulation, payload-modulation, on-t1, off-t1, on-t2, off-t2, on-t3, off-t3

PULSE_DETECT: 18 # Launch rf analyzer, uses freq, trigger_dbm

Argument	Description
shelf	Shelf number, usually 1. [R][D:1]
resource	Resource number. [W]
id	RF Generator ID (serial number) [W]
rfgen_flags	RF Generator flags, see above.
rfgen_flags_mask	Mask of what flags to set, see above.
pulse_width_us	Requested pulse width, units are in micro-seconds. Fractional units (0.5) accepted.
pulse_interval_us	Time between pulses, in micro-seconds.
pulse_count	Number of pulses (0-255). Continuous pairs of pulses for W53.
sweep_time_ms	Time interval between pulse groups in miliseconds
freq_khz	Center frequency in Khz
gain	Main TX/RX Amp, 0 or 14 (dB), default is 14
if_gain	Fine-tune TX/RX Gain, 0 - 40 dB
bb_gain	RX Gain, 0 - 62 in 2dB steps
radar_type	FCC, ETSI and other RF noise patterns.
prf1	ETSI/FCC5/W53 pulse repetition frequency.
prf2	ETSI/FCC5 pulse repetition frequency.
prf3	ETSI/FCC5 pulse repetition frequency.
freq_modulation	FCC5B setting, 5-20.

uut_channel	FCC5 setting, 20, 40, 80 or 160.
burst_offset	FCC5B burst offset in usec. Blank-time for W53-Chirp.
long_pulse_width_us	Requested long pulse width for W53 chirp, units are in micro-seconds.
chirp_width_khz	W53 Chirp width in khz.
ofdm_header	OFDM header modulation: 0 BPSK, 1 QPSK.
ofdm_payload	OFDM payload modulation: 0 BPSK, 1 QPSK, 2 8PSK.
ofdm_t1_on	OFDM time-period one on duration in usec
ofdm_t1_off	OFDM time-period one off duration in usec
ofdm_t2_on	OFDM time-period two on duration in usec
ofdm_t2_off	OFDM time-period two off duration in usec
ofdm_t3_on	OFDM time-period three on duration in usec
ofdm_t3_off	OFDM time-period three off duration in usec
ofdm_duration	OFDM duration in msec
trigger_dbm	Set the trigger in dBm for the RF analyzer feature (PULSE_DETECT type)
trigger_amp	Set the trigger amplitude in 1/100 of amp, for the RF analyzer feature (PULSE_DETECT type)
display	Display to use when launching pulse-detect GUI.
sample_rate	Tx/Rx sample rate in khz. Use 20000 if unsure.

Syntax: set_rfgen shelf resource id rfgen_flags rfgen_flags_mask pulse_width_us pulse_interval_us pulse_count sweep_time_ms freq_khz gain if_gain bb_gain radar_type prf1 prf2 prf3 freq_modulation uut_channel burst_offset long_pulse_width_us chirp_width_khz ofdm_header ofdm_payload ofdm_t1_on ofdm_t1_off ofdm_t2_on ofdm_t2_off ofdm_t3_on ofdm_t3_off ofdm_duration trigger_dbm trigger_amp display sample_rate

148. blink_attenuator

Visually identify attenuator by blinking LEDs or changing LCD colors or similar.

Argument	Description

shelf	Shelf number, usually 1. [R][D:1]
resource	Resource number. [W]
serno	Serial number for requested Attenuator, or 'all'. [W]

Syntax: blink_attenuator shelf resource serno

149. flash_attenuator

Upload new software image to specified attenuator.

Argument	Description
shelf	Shelf number, usually 1. [R][D:1]
resource	Resource number. [W]
serno	Serial number for requested Attenuator, or 'all'. [W]
filename	File to use when uploading to attenuator.

Syntax: flash_attenuator shelf resource serno filename

150. set_chamber

Argument	Description
chamber	Chamber name [W]
turntable	Turn-table address, for instance: 192.168.1.22:3001
speed_rpm	Speed in rpm (floating point number is accepted
position	Absolute position in degrees.
tilt	Absolute tilt in degrees.
cur_rotation	Primarily used to store the last known rotation for turntables that do not report absolute position. Use NA or leave blank if unsure.

Syntax: set_chamber chamber turntable speed_rpm position tilt cur_rotation

151. set_cx_report_timer

You must be registered with the Test-Manager(s) in order for this operation to succeed. The timer should be >= 500ms. This command will also cause the LANforge Resources to report to the LANforge Manager on a similar time interval.

Argument	Description
test_mgr	Name of the test manager, or 'all'. [W]

cx_name	Name of cross-connect, or 'all'. [W]
milliseconds	Report timer length in milliseconds. [W,250-60000][D:5000]
CXONLY	If you want to set the timer for ONLY the CX, and not the endpoints, enter 'cxonly'. Otherwise, leave it blank..

Syntax: set_cx_report_timer test_mgr cx_name milliseconds CXONLY

152. set_endp_proxy

This is only used when using proxy IP & Port with Layer-3 connections.

Argument	Description
endp_name	Name of endpoint. [W]
enabled	YES or NO to enable or disable proxying.
proxy_ip	Proxy IP Address.
proxy_ip_port	Proxy IP Port.

Syntax: set_endp_proxy endp_name enabled proxy_ip proxy_ip_port

153. set_endp_report_timer

The timer should be greater or equal to 500ms. This will cause the LANforge-GUI to request reports at the specified interval. For large numbers of entities, it is suggested to use longer report times to decrease load on the GUI.

Argument	Description
endp_name	Name of endpoint. [R]
milliseconds	Report timer length in milliseconds. [W,250-60000][D:5000]

Syntax: set_endp_report_timer endp_name milliseconds

154. set_cx_state

Set the state of the Cross-Connect(s). Valid states are:

```
RUNNING  |  # Sets the CX(s) in the running state.
SWITCH   |  # Sets the CX(s) in the running state, stopping any conflicting test
QUIESCE  |  # Stop transmitting and gracefully stop cross-connect.
STOPPED  |  # Sets the CX(s) in the stopped state.
DELETED  |  # Deletes the CX(s).
```

`SWITCH` only works on WanLink cross-connects at this time.

Related Commands

```
preexec_method  | baseCheckCxExists
postexec_cli    | show_cx %{test_mgr} %{cx_name}
```

Argument	Description
test_mgr	Name of the test-manager, or 'all'. [W]
cx_name	Name of the cross-connect, or 'all'. [W]
cx_state	One of: RUNNING, SWITCH, QUIESCE, STOPPED, or DELETED. [W]

Syntax: set_cx_state test_mgr cx_name cx_state

155. set_l4_endp

Set some extra layer-4 endpoint configuration.

```
Media source:
  DASH              1
  SMOOTH_STREAMING  2
  HLS               3
  PROGRESSIVE       4
  RTSP              5

Media quality:
  4K                0
  8K                1
  1080p             2
  720p              3
  360p              4
```

Argument	Description
alias	Name of endpoint. [R]
media_source	Specify media source, see above
media_quality	Specify media quality, see above
media_playbacks	Maximum number of media playbacks
media_random_seeks	Maximum number of media random seeks
duration_min	Minimum duration of media playback, in seconds
duration_max	Maximum duration of media playback, in seconds

Syntax: set_l4_endp alias media_source media_quality media_playbacks media_random_seeks duration_min duration_max

156. set_license

Install license keys on the manager machine. Enter the license keys as a single command. LANforge will break them into separate lines internally.

Argument	Description
licenses	License keys all appended into a single line. `Unescaped Value` [W]

Syntax: set_license licenses

157. set_password

Set the password for the current client (if client is not specified), or the specified client if we are logged in as 'admin'.

Argument	Description
old_password	Old password, or 'NA' for blank password. [W]
new_password	New password, or 'NA' for blank password. [W]
client	Specify the client. If left blank, will use current client.

Syntax: set_password old_password new_password client

158. set_ppp_link_state

Set the state of the PPP Link(s). Valid states are: RUNNING -- Sets the PPP Link(s) in the running state. STOPPED -- Sets the PPP Link(s) in the stopped state. DELETED -- Deletes the PPP Link(s).

Argument	Description
shelf	Name of the Shelf, or 'all'. [R][D:1]
resource	Number of the Resource, or 'all'. [W]
link	Unit Number of the PPP Link, or 'all'. [W]
ppp_state	One of: RUNNING, STOPPED, or DELETED. [R]

Syntax: set_ppp_link_state shelf resource link ppp_state

159. set_resource

Set some options for resources (clients)

Max staged bringup
is for all interfaces on a resource.

Max trying ifup
is the maximum amount of IP/Route configuration scripts that can be running concurrently.

Max station bringup
is maximum amount of stations that can be brought up per radio per 'tick'.

A tick is a minimum of 0.25 seconds, and may be longer on slower or more heavily loaded systems.

In general, you would want **max-station bringup** to be less than **max-staged-bringup** so that multiple radios could bring up stations concurrently.

Device profiles specify high-level behaviour. The value is set as a list of device profile names, each of which may have an optional number of traffic profile names appeneded with a '.' separating them. For example, this would specify two device profiles: '5-STA-AC 5-STA-N' and this would specify each with one or more traffic-profiles: '5-STA-AC.tcp-dl.udp-slow-bi 5-STA-n.slow-tcp-dl'

```
skip_load_db_on_start     | 0x1     # Should we skip loading the DB on start?
```

RF Path options are below:

```
LINE_OF_SIGHT       |  0
ONE_WALL_SHEETROCK  |  1
ONE_WALL_BRICK      |  2
```

Argument	Description
shelf	Name of the Shelf, or `all`. [R][D:1]
resource	Number of the Resource, or `all`. [W]
max_staged_bringup	Maximum amount of interfaces attempting to come up at once. Default is 50
max_trying_ifup	Maximum amount of interfaces running the network config 'ifup' logic. Default is 15
max_station_bringup	Maximum amount of stations to bring up per radio per tick. Default is 12.
device_profiles	List of profiles, see above
top_left_x	X Location for Chamber View.
top_left_y	X Location for Chamber View.
max_helper_count	Maximum number of helper traffic generation processes. 0 means CPU-core-count (AUTO).
resource_flags	System wide flags, often requires a reboot for changes to take effect.
resource_flags_mask	What flags to change. If unset, default is all.
user_name	Store user-name configured for this Resource. Only settable during DB load.
rf_path	Configure RF path between DUT and this device. See above.

Syntax: set_resource shelf resource max_staged_bringup max_trying_ifup max_station_bringup device_profiles top_left_x top_left_y max_helper_count resource_flags resource_flags_mask user_name rf_path

160. set_script

Add or modify a script for a particular endpoint, Test-Group, or Attenuator. Script types supported are currently:

```
NONE         | # Delete any existing script.
Script2544   | # For RFC 2544 type testing.
ScriptHunt   | # Hunt for maximum speed with constraints.
ScriptWL     | # For iterating through WanLink settings
ScriptAtten | # For Attenuators only.
```

Flags are defined as:

```
SCR_STOPPED              | 0x1       # Script should NOT have any affect on the e
SCR_NO_KEYED_RPT         | 0x2       # Script should NOT send reports to the CLI/
SCR_SYMMETRIC            | 0x4       # This script should apply settings to the p
SCR_HIDE_ITER_DETAILS    | 0x8       # Hide iteration detail reports.
SCR_HIDE_LEGEND          | 0x10      # Don't print the legend in the report.
SCR_HIDE_CSV             | 0x20      # Don't print the CSV data in the report.
SCR_RUN_ON_MGR           | 0x40      # Set automatically by LANforge.
SCR_COMPLETED            | 0x80      # Set automatically by LANforge.
SCR_LOOP                 | 0x100     # Loop script until manually stopped.
SCR_SHOW_DUPS            | 0x200     # Report duplicate packets.
SCR_SHOW_OOO             | 0x400     # Report out-of-order packets.
SCR_HIDE_HUNT            | 0x800     # Hide the individual hunt steps..just show
SCR_HIDE_LAT             | 0x1000    # Hide latency distribution reports.
SCR_HIDE_CONSTRAINTS     | 0x2000    # Hide constraints messages.
SCR_SHOW_ATTENUATION     | 0x4000    # Show attenuation packet stats.
SCR_USE_MSS              | 0x8000    # When setting packet size, set TCP MSS inst
SCR_SHOW_GOLDEN_LF       | 0x10000   # Add 'golden' LANforge graph for comparison
SCR_SHOW_GOLDEN_3P       | 0x20000   # Add 'golden' third-party AP graph for comp
```

Script2544

- Private data syntax:
- `rates_*` and `payload_sizes_*` are comma-separated-strings, e.g.: `60,128,256,1472`
- The interval durations are in miliseconds.
- Constraints syntax:
- Report syntax: (read-only, use `NA` when configuring)

ScriptHunt

- Private data syntax:
- Constraints syntax:

ScriptWL

- Private data syntax:

- Rates, latencies, jitter and drops are comma-separated-strings, e.g.: `60,128,256,1472`
- Default units for latencies and jitter is miliseconds
- Use the suffix `'us'` for micro-second precision.
- The interval duration is in miliseconds.

ScriptAtten

- Private data syntax:
- `run_duration` is in miliseconds
- `attenuations` is a comma-separated range.

Use `NA` for no changes to existing config, and use `NONE` if you want the value to be blank.

Argument	Description
endp	Endpoint, Test Group or Attenuator name or ID. [R]
name	Script name. [W]
flags	See above for description of the defined flags.
type	One of: NONE, Script2544, ScriptHunt, ScriptWL, ScriptAtten
private	Private encoding for the particular script.
group_action	How to handle group script operations: ALL, Sequential
loop_count	How many times to loop before stopping (0 is infinite).

Syntax: set_script endp name flags type private group_action loop_count

161. set_test_id

Set the test ID on specified resource(s). Currently this is only used by the Android app, and other resources will ignore the request. Test-ID can be up to 15 characters in length.

Argument	Description
shelf	Name of the Shelf, or `all`. [R][D:1]
resource	Number of the Resource, or `all`. [W]
test_id	Up to 15 character identifier.

Syntax: set_test_id shelf resource test_id

162. rpt_script

Argument	Description
endp	Endpoint name or ID. [W]
name	Script name. [W]
flags	See above for description of the defined flags.
type	One of: NONE, Script2544, ScriptHunt, ScriptWL
private	Private encoding for the particular script.
group_action	All or Sequential.
loop_count	How many times to loop before stopping (0 is infinite).

Syntax: rpt_script endp name flags type private group_action loop_count

163. add_threshold

Add or modify a threshold-alert for a particular endpoint. Threshold Types are defined as:

```
TX_BPS_RATE_OOR_3S   | 0    # tx-bps over last 3 seconds is out of range.
RX_BPS_RATE_OOR_3S   | 1    # rx-bps over last 3 seconds is out of range.
TX_BPS_RATE_OOR_30S  | 2    # tx-bps over last 30 seconds is out of range.
RX_BPS_RATE_OOR_30S  | 3    # rx-bps over last 30 seconds is out of range.
TX_BPS_RATE_OOR_1m   | 4    # tx-bps over last 1 minute is out of range.
RX_BPS_RATE_OOR_1m   | 5    # rx-bps over last 1 minute is out of range.
NO_RX_SINCE          | 6    # Have not received any bytes/packets in specified ti
TT_RX_LAT_OOR        | 7    # Latency running-average out of range.
TT_RX_DROP_OOR       | 8    # RX Drop percentage is out of range (per-million).
```

Use `NA` for no changes to existing config, and use `NONE` if you want the value to be blank.

Special `thresh_id` values to help with flushing entire list of thresholds to remote:

```
Mark All        | -2     #  Mark all
Delete Marked   | -3     #  Delete any marked.
```

Setting a threshold will clear the mark.

Argument	Description
endp	Endpoint name or ID. [R]
thresh_id	Threshold ID. If adding new threshold, use -1, otherwise use correct ID. [W]
thresh_type	Threshold type, integer, (see above).
thresh_min	Minimum acceptable value for this threshold.
thresh_max	Maximum acceptable value for this threshold.

Syntax: add_threshold endp thresh_id thresh_type thresh_min thresh_max

164. set_wifi_radio

Modify a WIFI Radio Interface (such as `phy0` or `wiphy0`). This command requires that the designated machine support the LANforge wifi driver for the Atheros brand WIFI NICs. The radio interface holds common configuration for the Virtual WiFi interfaces. `NA` can be used for any values that you do not wish to modify.

NOTE: this command is also used for radios dedicated for *radar emulation*. For adjusting vAPs, only **channel, NSS, and txpower** are commonly used.

To set any option to default (or un-set value, use `DEFAULT`. You may have to reboot the system to have the defaults take affect.

Mode options are below:

```
Input        : Enum Val  : Shown by nc_show_ports

AUTO         |  0        #  802.11g
802.11a      |  1        #  802.11a
b            |  2        #  802.11b
g            |  3        #  802.11g
abg          |  4        #  802.11abg
abgn         |  5        #  802.11abgn
bgn          |  6        #  802.11bgn
bg           |  7        #  802.11bg
abgnAC       |  8        #  802.11abgn-AC
anAC         |  9        #  802.11an-AC
an           | 10        #  802.11an
bgnAC        | 11        #  802.11bgn-AC
abgnAX       | 12        #  802.11abgn-AX
                         #     a/b/g/n/AC/AX (dual-band AX) support
bgnAX        | 13        #  802.11bgn-AX
anAX         | 14        #  802.11an-AX
aAX          | 15        #  802.11a-AX (6E disables /n and /ac)
abgn7        | 16        #  802.11abgn-EHT
                         #     a/b/g/n/AC/AX/EHT (dual-band AX) support
bgn7         | 17        #  802.11bgn-EHT
an7          | 18        #  802.11an-EHT
a7           | 19        #  802.11a-EHT (6E disables /n and /ac)
```

Antenna settings determine number of active antennae:

```
Diversity/All  | 0
Fixed-A (1x1)  | 1
AB (2x2)       | 4
ABC (3x3)      | 7
ABCD (4x4)     | 8
8x8 (8x8)      | 9
```

Flags are currently defined as:

```
hw_sim          | 0x1          # Create hw-sim virtual radio if radio does not al
no_scan_share   | 0x00040      # Disable sharing scan results.
verbose         | 0x10000      # Verbose-Debug:  Increase debug info in wpa-suppl
no_sw_crypt     | 0x20000      # Disable software-crypt for this radio.  Disables
ct-sta-mode     | 0x40000      # Enable CT-STA mode if radio supports it.  Effici
```

```
firmware_cfg    | 0x80000      # Apply firmware config.
ignore_radar    | 0x200000     # Ignore RADAR events reported by firmware.
allow_all_mcs   | 0x400000     # Enable MCS otherwise disabled by firmware (ath10
no_runtime_pm   | 0x800000     # Disable runtime deep sleep mode (mtk7921k only a
extra_txstatus  | 0x1000000    # Enable increased packet tx-stats.  May decrease
extra_rxstatus  | 0x2000000    # Enable increased packet rx-stats.  May decrease
ofdma_stats     | 0x4000000    # Enable increased OFDMA statistics.  May decrease
txs_all_skb     | 0x8000000    # Request TX status for every packet.  May decreas
use_syslog      | 0x20000000   # Put supplicant logs in syslog instead of a file.
```

The `firmware_cfg` flag is not saved in LANforge databases, so if you are reloading databases, you may have to manually re-apply the firmware settings. The config data for the last apply is stored on local disk and used by the driver when it loads on bootup.

`const_tx`: This is only supported on carl9170 adapters with modified firmware. Contact your supplier if you want more info on this feature.

Related Commands

```
preexec_method  | baseCheckPortExists
postexec_cli    | nc_show_ports %{shelf} %{resource} %{radio}
```

```
max_amsdu:  Number of frames for ath10k radios, but for ax200/ax210 radios, the
  100:  Default (4k for ax200 in current driver)
  104:  2Kb
  101:  4Kb
  102:  8Kb
  103:  12Kb
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
radio	Name of the physical radio interface, for example: wiphy0 [W]
mode	RF Pattern Generator: WiFi mode for radar emulation, see table. Do not use for vAPs.
channel	Channel number for this radio device. Frequency takes precedence if both are set to non-default values. `0xFFFF`, `AUTO` or `DEFAULT` means ANY.
country	Country number for this radio device.
frequency	Frequency for this radio. `0xFFFF`, `AUTO` or `DEFAULT` means ANY.

frag_thresh	Fragmentation Threshold (256 - 2346, 2346 == disabled).
rate	No longer used, specify the rate on the virtual station(s) instead.
rts	The RTS Threshold for this radio (off, or 1-2347).
txpower	The transmit power setting for this radio. (AUTO for system defaults)
mac	Used to identify when name cannot be trusted (2.6.34+ kernels).
antenna	Antenna configuration: 0 Diversity/All, 1 Fixed-A (1x1), 4 AB (2x2), 7 ABC (3x3), 8 ABCD (4x4), 9 8x8
flags	Flags for this interface (see above.)
flags_mask	If set, only these flags will be considered.
const_tx	RF Pattern Generator: encoded as a single 32-bit integer. See above.
pulse_width	RF Pattern generator: pulse width in usecs.
pulse_interval	RF Pattern generator: interval between pulses in usecs.
vdev_count	Configure radio vdev count.
peer_count	Number of peer objects for this radio.
stations_count	Number of stations supported by this radio.
rate_ctrl_count	Number of rate-ctrl objects for this radio.
fwname	Firmware name (for example: firmware-5.bin)
fwver	Firmware API version (for example, 5 if firmware is based on firmware-5.bin
txdesc_count	Transmit descriptor count for this radio.
tids_count	TIDs count for this radio.
skid_limit	Firmware hash-table Skid Limit for this radio.
active_peer_count	Number of locally-cached peer objects for this radio.
tx_pulses	Number of pattern pulses per burst for RF noise generator.

pulse2_interval_us	Pause between pattern burst for RF noise generator.
max_amsdu	Maximum number of frames per AMSDU that may be transmitted. See above.
pref_ap	Preferred AP BSSID for all station vdevs on this radio.
ampdu_factor	ax200/ax210 only, currently. Requires module reload. OS Default: 0xFF

Syntax: set_wifi_radio shelf resource radio mode channel country frequency frag_thresh rate rts txpower mac antenna flags flags_mask const_tx pulse_width pulse_interval vdev_count peer_count stations_count rate_ctrl_count fwname fwver txdesc_count tids_count skid_limit active_peer_count tx_pulses pulse2_interval_us max_amsdu pref_ap ampdu_factor

165. set_wifi_extra

This configures WiFi ports with advanced features. Not all combinations are valid..contact support and/or see wpa_supplicant & hostapd configuration documentation for details. Most values will default to sane values if left blank. To clear a text value, set it to '[BLANK]'

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	WiFi interface name or number. [W]
key_mgmt	Key management: WPA-PSK, WPA-EAP, IEEE8021X, NONE, WPA-PSK-SHA256, WPA-EAP-SHA256 or combo.
pairwise	Pairwise ciphers: CCMP, TKIP, NONE, or combination.
group	Group cyphers: CCMP, TKIP, WEP104, WEP40, or combination.
psk	WPA(2) pre-shared key. If unsure, use this field for any password entry. Prepend with 0x for ascii-hex representation.
key	WEP key0. This should be entered in ascii-hex. Use this only for WEP.
ca_cert	CA-CERT file name.
eap	EAP method: MD5, MSCHAPV2, OTP, GTC, TLS, PEAP, TTLS.

identity	EAP Identity string.
anonymous_identity	Anonymous identity string for EAP.
phase1	Outer-authentication, ie TLS tunnel parameters.
phase2	Inner authentication with TLS tunnel.
password	EAP Password string.
pin	EAP-SIM pin string. (For AP, this field is HS20 Operating Class)
pac_file	EAP-FAST PAC-File name. (For AP, this field is the RADIUS secret password)
private_key	EAP private key certificate file name. (For AP, this field is HS20 WAN Metrics)
pk_passwd	EAP private key password. (For AP, this field is HS20 connection capability)
hessid	802.11u HESSID (MAC address format) (or peer for WDS stations).
realm	802.11u realm: mytelco.com
client_cert	802.11u Client cert file: /etc/wpa_supplicant/ca.pem
imsi	802.11u IMSI: 310026-000000000
milenage	802.11u milenage: 90dca4eda45b53cf0f12d7c9c3bc6a89:cb9cccc4b9258e6dca4760379fb82
domain	802.11u domain: mytelco.com
roaming_consortium	802.11u roaming consortium: 223344 (15 characters max)
venue_group	802.11u Venue Group, integer. VAP only.
venue_type	802.11u Venue Type, integer. VAP only.
network_type	802.11u network type, integer, VAP only.
ipaddr_type_avail	802.11u network type available, integer, VAP only.
network_auth_type	802.11u network authentication type, VAP only.
anqp_3gpp_cell_net	802.11u 3GCPP Cellular Network Info, VAP only.

Syntax: set_wifi_extra shelf resource port key_mgmt pairwise group psk key ca_cert eap identity anonymous_identity phase1 phase2 password pin pac_file private_key pk_passwd hessid realm client_cert imsi milenage domain roaming_consortium venue_group venue_type network_type ipaddr_type_avail network_auth_type anqp_3gpp_cell_net

166. set_wifi_extra2

This configures WiFi ports with advanced features. Not all combinations are valid. Contact support and/or see wpa_supplicant & hostapd configuration documentation for details. Most values will default to sane values if left blank. To clear a text value, set it to `[BLANK]`.

freq_24 and freq_5 are used to configure a subset of available channels that can be used. See add_venue for syntax definition.

For stations, the behaviour is thus:

- If the parent radio has a VAP, then the configured frequency for the radio will be used.
- Else if the user has configured freq_24 or freq_5, that will be used.
- However, if the mode specifies a frequency range (ie /b or /g), then frequencies outside of the selected band will still not be allowed.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	WiFi interface name or number. [W]
req_flush	Set to 1 if you wish to flush changes to kernel now.
ignore_probe	Per-million: AP ignore probe percentage.
ignore_auth	Per-million: AP ignore auth request percentage.
ignore_assoc	Per-million: AP ignore assoc request percentage.
ignore_reassoc	Per-million: AP ignore re-assoc request percentage.
corrupt_gtk_rekey_mic	Per-million: AP corrupts GTK Rekey MIC.
radius_ip	RADIUS server IP Address (AP Only)
radius_port	RADIUS server IP Port (AP Only)
freq_24	Frequency list for 2.4Ghz band, see above.
freq_5	Frequency list for 5Ghz band, see above.
post_ifup_script	Script name with optional args, will run after interface comes up and gets IP.
ocsp	OCSP settings: 0=disabled, 1=try, but to not require response, 2=require valid OCSP stapling response.
venue_id	Venue-ID for this wifi device. VAP in same venue will share neigh reports as appropriate.
sae_pwe	Set SAE-PWE, 0 == hunting-and-pecking, 1 == hash-to-element, 2 allow both.

initial_band_pref	Initially connect on this band, if available in scan. 0=ignore, 2=2ghz, 5=5ghz, 6=6ghz.

Syntax: set_wifi_extra2 shelf resource port req_flush ignore_probe ignore_auth ignore_assoc ignore_reassoc corrupt_gtk_rekey_mic radius_ip radius_port freq_24 freq_5 post_ifup_script ocsp venue_id sae_pwe initial_band_pref

167. set_wifi_txo

This allows one to configure a VAP or Station wifi device to override the normal rate-control and send Data and QOS Data frames at the exact rates specified. This may only work on certain radios/firmware. It can be used to do packet-error testing and other testing where controlling the TX rate is important. txo_txpower notes: For ath10k wifi-5 radios, this is a power setting, for MTK radios, this is an adjustment from default, where 8 is default, less than 8 is reducing power, and more than 8 is increasing power above default.

Flags are currently defined as:

```
enable_agg      | 0x1          # Enable aggregation.  This can only be enabled or
                               # Enabling aggregation will make retransmit count
                               # incorrect.
block_traffic   | 0x2          # Disable all tx/rx traffic for a given radio.  Th
                               # enabled on MT76 radios.
enable_ldpc     | 0x4          # Enable LDPC wifi feature, should help throughput
enable_stbc     | 0x8          # Enable STBC wifi feature.
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	WiFi interface name or number. [W]
txo_enable	Set to 1 if you wish to enable transmit override, 0 to disable.
txo_txpower	Configure TX power in db. Use 255 for system defaults. See notes above.
txo_pream	Select rate preamble: 0 == OFDM, 1 == CCK, 2 == HT, 3 == VHT, 4 == HE_SU, 5 = EHT.
txo_mcs	Configure the MCS (0-3 for CCK, 0-7 for OFDM, 0-7 for HT, 0-9 for VHT, 0-11 for HE, 0-13 for EHT
txo_nss	Configure number of spatial streams (0 == nss1, 1 == nss2, ...).
txo_bw	Configure bandwidth: 0 == 20, 1 == 40, 2 == 80, 3 == 160, 4 == 80+80, 5 = 320.

txo_retries	Configure number of retries. 0 or 1 means no retries).
txo_sgi	Should rates be sent with short-guard-interval or not?
txo_flags	Specify some additional behaviour.
txo_flags_mask	Specify which txo_flags should be changed.

Syntax: set_wifi_txo shelf resource port txo_enable txo_txpower txo_pream txo_mcs txo_nss txo_bw txo_retries txo_sgi txo_flags txo_flags_mask

168. set_wifi_corruptions

This lets one configure a station or AP to purposely corrupt, delay, and drop various management frames. To disable a corruption, set it to 0. To have corruption always happen, set to maximum value (1000000).

For the delay options, this will effectively delay the response by a random number of miliseconds between the configured min and max.

This command is primarily for WiFi stations at this time. For AP devices, see the set_wifi_extra2 command.

To specify which packet types are to be affected, set the **Corrupt Flags** accordingly:

```
MSG_TYPE_EAPOL              |  0x0001   # Any EAPOL message
MSG_TYPE_DEAUTH             |  0x0002   # de-authentication message
MSG_TYPE_EAPOL_1_OF_4       |  0x0004   # EAPOL message 1/4
MSG_TYPE_EAPOL_2_OF_4       |  0x0008   # EAPOL message 2/4
MSG_TYPE_EAPOL_3_OF_4       |  0x0010   # EAPOL message 3/4
MSG_TYPE_EAPOL_4_OF_4       |  0x0020   # EAPOL message 4/4
MSG_TYPE_EAPOL_1_OF_2       |  0x0040   # EAPOL message 1/2
MSG_TYPE_EAPOL_2_OF_2       |  0x0080   # EAPOL message 2/2
MSG_TYPE_EAPOL_KEY_REQ      |  0x0100   # EAP Key Request (not sure if this works
MSG_TYPE_EAPOL_ASSOC        |  0x0200   # EAP Association
MST_TYPE_EAPOL_ID_REQ       |  0x0400   # EAP Identity request
MST_TYPE_EAPOL_ID_RESP      |  0x0800   # EAP Identity response
MST_TYPE_EAPOL_OTHER_REQ    |  0x1000   # EAP Requests that do not match other th
MST_TYPE_EAPOL_OTHER_RESP   |  0x2000   # EAP Responses that do not match other t
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	WiFi interface name or number. [W]
req_flush	Set to 1 if you wish to flush changes to kernel now.
ignore_per_mil	Per-million: Station to randomly ignore selected message types by this amount.
ignore_flags	Specify packet types to ignore (see flags above).

corrupt_per_mil	Per-million: Station to randomly corrupt selected message types by this amount.
corrupt_flags	Specify packet types to corrupt (see flags above).
delay_min	miliseconds: Station to randomly delay processing received messages, min time
delay_max	miliseconds: Station to randomly delay processing received messages, max time
delay_flags	Specify packet types to delay (see flags above).
dup_flags	Specify packet types to duplicate (see flags above).
dup_per_65535	Percentage, represented as x per 65535 of packets we should duplicate.

Syntax: set_wifi_corruptions shelf resource port req_flush ignore_per_mil ignore_flags corrupt_per_mil corrupt_flags delay_min delay_max delay_flags dup_flags dup_per_65535

169. set_wifi_custom

This text will be added to the end of the hostapd config file for virtual APs, and to the wpa_supplicant config file for virtual stations. This can be used for experimental work and for cases where LANforge does not support all of the desired features through normal means. The text must be entered one line at a time, primarily due to CLI parsing limitations. NOTE: You have to manually reset the interface to have the new changes take effect.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	WiFi interface name or number. [W]
type	NA for now, may specify specific locations later. [D:NA]
text	[BLANK] will erase all, any other text will be appended to existing text. `Unescaped Value` [W]

Syntax: set_wifi_custom shelf resource port type text

170. set_ifup_script

Set the IF-UP script for a port. The post_ifup_script argument does not need to use single quotes, since all tokens after the port-id will be considered part of the script variable. This script needs to be on the LANforge machine of the resource number. While the default directory is often `/home/lanforge`, it is worth setting this in case you are on non-standard hardware.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	WiFi interface name or number. [W]
flags	Currently un-defined, use NA
post_ifup_script	Script name with optional args, will run after interface comes up and gets IP. Use [BLANK] to clear. `Unescaped Value` [W]

Syntax: set_ifup_script shelf resource port flags post_ifup_script

171. set_endp_addr

Set the MAC, IP, and Port addresses for an UN_MANAGED endpoint. The endpoint must be created as UN_MANAGED, and you must set its addresses before you can start it. The syntax for addresses is:

- MAC addresses is: `01:BB:CC:DD:EE:FF`.
- IP addresses should be entered in dot notation, eg: `172.4.1.1`.
- and port is the IP port (1-65534).

Related Commands

```
preexec_method  | baseCheckEndpExists
postexec_cli    | nc_show_endpoints %{name}
```

Argument	Description
name	The name of the endpoint we are configuring. [R]
mac	The MAC address. Only needed for LANforge protocol Endpoints.
ip	The IP Address. Used for TCP/IP and UDP/IP protocols.
min_port	The Minimum IP Port. Used for TCP/IP and UDP/IP protocols.
max_port	The Maximum IP Port. Used for TCP/IP and UDP/IP protocols.

Syntax: set_endp_addr name mac ip min_port max_port

172. set_endp_payload

Set the payload type, and potentially the payload for a particular Endpoint. To enter an actual payload, use space separated Hexadecimal. For example: `00 00 01 04 bb de ad be ef`. The payload must be entered all at once on one line. The payload cannot be longer than 2048 bytes (though when

represented as ASCII HEX, the actual input can be longer than that.)

Possible values for **payload type:**

```
increasing      |#  bytes start at 00 and increase, wrapping if needed.
decreasing      |#  bytes start at FF and decrease, wrapping if needed.
random          |#  generate a new random payload each time sent.
random_fixed    |#  means generate one random payload, and send it over and over
zeros           |#  Payload is all zeros (00).
ones            |#  Payload is all ones  (FF).

PRBS_4_0_3      |#  Use linear feedback shift register to generate pseudo random
                 #  First number is bit-length of register, second two are TAPS
                 #  Seed value is always 1.

PRBS_7_0_6      |#  PRBS (see above)
PRBS_11_8_10    |#  PRBS (see above)
PRBS_15_0_14    |#  PRBS (see above)
custom          |#  Enter your own payload with the set_endp_payload
```

Related Commands

```
postexec_cli          | nc_show_endpoints %{name}
```

Argument	Description
name	The name of the endpoint we are configuring. [R]
payload_type	The payload type. See help for add_endp. [W][D:increasing]
payload	For custom payloads, enter the payload in hex, up to 2048 bytes. `Unescaped Value`

Syntax: set_endp_payload name payload_type payload

173. set_endp_details

Modify TCP window sizes. The rcvbuf_size will be passed to:

```
setsockopt(desc, SOL_SOCKET, SO_RCVBUF, &size, sizeof(size))
```

and the sndbuf will be set similarly:

```
setsockopt(desc, SOL_SOCKET, SO_SNDBUF, &size, sizeof(size))
```

See the socket man page: `man socket` for more detailed information about what this means.

`conn_timer` is used to create TCP connections of short duration. If this is set to some value other than `0xFFFFFFFF`, then the connection will be closed and reopened at that duration. Set to a low value for testing firewalls and devices that are interested in connections-per-second.

`dst_mac` is used for custom-ethernet endpoints that are replaying pkts and my want to re-write the DST MAC as we replay.

Related Commands

`postexec_cli` | `nc_show_endpoints %{name}`

Argument	Description
name	The name of the endpoint we are configuring. [R]
rcvbuf_size	The receive buffer (window) size. Zero for AUTO
sndbuf_size	The sending buffer (window) size. Zero for AUTO
min_conn_timer	The minimum duration (in ms) this connection should run before re-establishing.
pkts_to_send	Number of packets to send before stopping. 0 means infinite.
dst_mac	Destination MAC address, used for custom Ethernet replays.
max_conn_timer	The maximum duration (in ms) this connection should run before re-establishing.
min_reconn_pause	The minimum time between re-connects, in ms.
max_reconn_pause	The maximum time between re-connects, in ms.
max_ip_port	The maximum IP Port value. (The value for min ip port is set through the add_endp/ip_port parameter.) If greater than min, each connection will use a random value between min and max.
conn_timeout	For TCP, the max time in miliseconds to wait for connection to establish.
tcp_mss	TCP Maximum Segment Size, affects packet size on the wire (88 - 32767).
tcp_min_delack	NA: No longer supported.
tcp_max_delack	NA: No longer supported.
tcp_delack_segs	NA: No longer supported.
mcast_src_ip	Multicast source address (used in SSM mode, multicast endpoints only)
mcast_src_port	Multicast source address (used in SSM mode, multicast endpoints only)

Syntax: set_endp_details name rcvbuf_size sndbuf_size min_conn_timer pkts_to_send dst_mac max_conn_timer min_reconn_pause max_reconn_pause

max_ip_port conn_timeout tcp_mss tcp_min_delack tcp_max_delack tcp_delack_segs mcast_src_ip mcast_src_port

174. set_event_interest

Set event interest. If flags and val1 are left blank, then the current settings will be displayed.
ei_flags:

```
CLEAR | 0   # will clear interest
SET   | 0x1 # set interest flag
```

events1 values:

```
Link-Down                |     0x000001  # Notify when Interface Link goes DOWN.
Link-Up                  |     0x000002  # Notify when Interface Link goes UP.
Custom                   |     0x000004  # Custom event (generated by USER in GUI
Resource-Down            |     0x000008  # Resource has crashed, rebooted, etc.
Resource-Up              |     0x000010  # Resource has connected to manager.
Endp-Stopped             |     0x000020  # Endpoint stopped for some reason.
Endp-Started             |     0x000040  # Endpoint was started.
Disconnect               |     0x000080  # WiFi interface disconnected from AP.
Connect                  |     0x000100  # WiFi interface connected to AP.
Logout                   |     0x000200  # CLI/GUI user disconnected from LANforge
Login                    |     0x000400  # CLI/GUI user connected to LANforge.
Stop-Reports             |     0x000800  # Stop saving report data files (CSV).
Start-Reports            |     0x001000  # Start saving report data files (CSV).
Cleared                  |     0x002000  # Counters were cleared for some entity.
Link-Errors              |     0x004000  # Port shows low-level link errors.
DHCP-Fail                |     0x008000  # DHCP Failed, maybe out of leases?
DHCP-Timeout             |     0x010000  # Timed out talking to DHCP server.
DHCP4-Error              |     0x020000  # DHCP gave out duplicated IP address.
DHCP6-Error              |     0x040000  # DHCPv6 gave out duplicated IPv6 address
WiFi-Config              |     0x080000  # WiFi Configuration Error.
Bad-MAC                  |     0x100000  # Invalid MAC address configured.
Migrated                 |     0x200000  # Port (station network interface) migrat
BAD-TOS                  |     0x400000  # Endpoint has bad ToS values configured.
NO-RX-SINCE              |     0x800000  # Endpoint threshold alert.
NO-RX-SINCE-CLEARED      |    0x1000000  # Endpoint threshold alert cleared.
RX-BPS-OOR-3S            |    0x2000000  # Endpoint threshold alert.
RX-BPS-OOR-3S-CLEARED    |    0x4000000  # Endpoint threshold alert cleared.
RX-BPS-OOR-30S           |    0x8000000  # Endpoint threshold alert.
RX-BPS-OOR-30S-CLEARED   |   0x10000000  # Endpoint threshold alert cleared.
RX-BPS-OOR-1M            |   0x20000000  # Endpoint threshold alert.
RX-BPS-OOR-1M-CLEARED    |   0x40000000  # Endpoint threshold alert cleared.
TX-BPS-OOR-3S            |   0x80000000  # Endpoint threshold alert.
```

events2 values:

```
TX-BPS-OOR-3S-CLEARED    |          0x1  # Endpoint threshold alert cleared.
TX-BPS-OOR-30S           |          0x2  # Endpoint threshold alert.
TX-BPS-OOR-30S-CLEARED   |          0x4  # Endpoint threshold alert cleared.
TX-BPS-OOR-1M            |          0x8  # Endpoint threshold alert.
TX-BPS-OOR-1M-CLEARED    |         0x10  # Endpoint threshold alert cleared.
RX-LAT-OOR               |         0x20  # Endpoint threshold alert.
RX-LAT-OOR-CLEARED       |         0x40  # Endpoint threshold alert cleared.
```

```
RX-DROP-OOR-3S           |         0x80  # Endpoint threshold alert.
RX-DROP-OOR-3S-CLEARED   |        0x100  # Endpoint threshold alert cleared.
RX-DROP-OOR-1M           |        0x200  # Endpoint threshold alert.
RX-DROP-OOR-1M-CLEARED   |        0x400  # Endpoint threshold alert cleared.
FW-CRASH                 |        0x800  # Firmware for entity has crashed.
FW-FAIL                  |       0x1000  # Firmware failed powerup, may require re
IFUP-FAIL                |       0x2000  # IFUP-POST Script returned error code.
IFUP-OK                  |       0x4000  # IFUP-POST Script completed successfully
IFDOWN-FAIL              |       0x8000  # IFDOWN-PRE Script (ifup --logout) retur
IFDOWN-OK                |      0x10000  # IFDOWN-PRE Script (ifup --logout) compl
```

events3-4 are currently un-used.

Var1: Currently un-defined.

Argument	Description
ei_flags	Event Interest flags, see above. [W]
events1	See description for possible values.
events2	See description for possible values.
events3	See description for possible values.
events4	See description for possible values.
var1	Currently un-used.
event_cnt	Maximum number of events to store.

Syntax: set_event_interest ei_flags events1 events2 events3 events4 var1 event_cnt

175. set_event_priority

Set event priority. If flag an priority are left blank, then the current settings will be displayed. Events:

```
Link-Down       |  0     # Notify when Interface Link goes UP.
Link-Up         |  1     # Notify when Interface Link goes DOWN.
Custom          |  2     # Custom event (generated by USER in GUI or CLI).
Resource-Down   |  3     # Resource has crashed, rebooted, etc.
Resource-Up     |  4     # Resource has connected to manager.
Endp-Stopped    |  5     # Endpoint stopped for some reason.
Endp-Started    |  6     # Endpoint was started.
Disconnect      |  7     # WiFi interface disconnected from AP.
Connect         |  8     # WiFi interface connected to AP.
Logout          |  9     # CLI/GUI user disconnected from LANforge.
Login           | 10     # CLI/GUI user connected to LANforge.
Stop-Reports    | 11     # Stop saving report data files (CSV).
Start-Reports   | 12     # Start saving report data files (CSV).
Cleared         | 13     # Counters were cleared for some entity.
Link-Errors     | 14     # Port shows low-level link errors.
DHCP-Fail       | 15     # DHCP Failed, maybe out of leases?
DHCP-Timeout    | 16     # Timed out talking to DHCP server.
```

```
DHCP4-Error     | 17     # DHCP gave out duplicated IP address.
DHCP6-Error     | 18     # DHCPv6 gave out duplicated IPv6 address.
WiFi-Config     | 19     # WiFi Configuration Error.
Bad-MAC         | 20     # Invalid MAC address configured.
Migrated        | 21     # Port (station network interface) migrated.
```

Priorities:

```
AUTO      | 0   # Let event creator decide the priority.
DEBUG     | 1   #
INFO      | 2   #
WARNING   | 3   #
CRITICAL  | 4   #
FATAL     | 5   #
```

Argument	Description
event	Number or name for the event, see above. [R,0-21]
priority	Number or name for the priority. [R,0-5]

Syntax: set_event_priority event priority

176. set_mc_endp

Argument	Description
name	The name of the endpoint we are configuring. [R]
ttl	Time to live for the multicast packets generated.
mcast_group	Multicast group IP, ie: 224.1.1.2 IPv6 supported as well.
mcast_dest_port	Multicast destination IP Port, for example: 55000
rcv_mcast	Should we attempt to receive? Values: Yes or No

Syntax: set_mc_endp name ttl mcast_group mcast_dest_port rcv_mcast

177. show_adb

Show one or all ADB (Android) devices. See 'discover' command for how to request discovery of devices. Optional command: probe: Re-query the username and app identifier, useful after re-install.

Argument	Description
shelf	Shelf number or alias, can be 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]

serno	Serial number for requested ADB device, or 'all'. [W]
extra	Optional command, see above.

Syntax: show_adb shelf resource serno extra

178. show_chamber

Show one or all Chambers. If the name is 'ALL', or no name is specified then all are shown, otherwise only the single requested Chamber is shown.

Argument	Description
name	Chamber Name or 'ALL'. [W][D:ALL]

Syntax: show_chamber name

179. show_dut

Show one or all Devices Under Test (DUT). If the name is 'ALL', or no name is specified then all are shown, otherwise only the single requested DUT is shown.

Argument	Description
name	DUT Name or 'ALL'. [W][D:ALL]

Syntax: show_dut name

180. show_events

Show recent events of interest. To filter on certain events, specify the entity in question. Otherwise, use `all` or leave blank to match all events.

Event types:

```
All               |#
Shelf             |#
Card              |#
Port              |#
Endp              |#
CX                |#
Test_Mgr          |#
Span              |#
Channel_Group     |#
PPP_Link          |#
PESQ              |#
CollisionDomain   |#
```

Argument	Description
type	Event type filter. [R]
shelf	Event shelf filter.
card	Event resource filter.

port	Event port filter (can be port name or number).
endp	Event endpoint filter.
extra	Extra filter, currently ignored.

Syntax: show_events type shelf card port endp extra

181. show_alerts

Show active Alerts of interest. To filter on certain alerts, specify the entity in question. Otherwise, use 'all' or leave blank to match all events.

Alert types:

```
All              |#
Shelf            |#
Card             |#
Port             |#
Endp             |#
CX               |#
Test_Mgr         |#
Span             |#
Channel_Group    |#
PPP_Link         |#
PESQ             |#
CollisionDomain  |#
```

Argument	Description
type	Alert type filter. [R]
shelf	Alert shelf filter.
card	Alert resource filter.
port	Alert port filter (can be port name or number).
endp	Alert endpoint filter.
extra	Extra filter, currently ignored.

Syntax: show_alerts type shelf card port endp extra

182. show_event_interest

Display Event settings.

Syntax: show_event_interest

183. show_err

Send an error message to everyone else logged in to the server.

Argument	Description
message	Message to show to others currently logged on. `Unescaped Value` [R]

Syntax: show_err message

184. start_endp

Start and endpoint. This command is only valid for Multicast endpoints, which are NOT managed by a cross-connect like the rest of the endpoints. See Also: set_cx_state

Related Commands

`postexec_cli`	`nc_show_endpoints %{name}`

Argument	Description
endp_name	Name of the cross-connect, or 'all'. [R]

Syntax: start_endp endp_name

185. show_profile

Show one or all Device Profiles. If the name is 'ALL', or no name is specified then all are shown, otherwise only the single requested Profile is shown.

Argument	Description
name	Profile Name or 'ALL'. Not specifying a profile is same as 'ALL'.

Syntax: show_profile name

186. show_text_blob

Show one or all Text Blobs. If the name is 'ALL', or no name is specified then all are shown, otherwise only the single requested blob is shown.

Argument	Description
type	Text Blob type or 'ALL'. [R]
name	Text Blob Name or 'ALL'. [R]
brief	Set to 'brief' for a brief listing of all text blobs.

Syntax: show_text_blob type name brief

187. show_traffic_profile

Show one or all Traffic Profiles. If the name is 'ALL', or no name is specified then all are shown, otherwise only the single requested Profile is shown.

Argument	Description
name	Profile Name or 'ALL'. [R]

Syntax: show_traffic_profile name

188. start_group

Starts all cross-connects in a test group See Also: add_group, add_tgcx

Related Commands

`postexec_cli | show_cx %{name}`

Argument	Description
name	The name of the test group. [R]

Syntax: start_group name

189. start_ppp_link

Start a PppLink.

Argument	Description
shelf	Name/id of the shelf. [R][D:1]
resource	Resource number that holds this PppLink. [W]
unit_num	Unit-Number for the PppLink to be started. [R]

Syntax: start_ppp_link shelf resource unit_num

190. stop_endp

Stop an endpoint. This command is only valid for Multicast endpoints, which are NOT managed by a cross-connect like the rest of the endpoints. See Also: set_cx_state

Argument	Description
endp_name	Name of the endpoint, or 'all'. [R]

Syntax: stop_endp endp_name

191. quiesce_endp

Quiesce an endpoint. This command is only valid for Multicast endpoints, which are NOT managed by a cross-connect like the rest of the endpoints. See Also: set_cx_state

Argument	Description
endp_name	Name of the endpoint, or 'all'. [R]

Syntax: quiesce_endp endp_name

192. stop_group

Stops all cross-connects in one or all test groups See Also: add_group, add_tgcx, start_group

Related Commands

`postexec_cli`	`show_cx %{name} all`

Argument	Description
name	The name of the test group, or 'all' [R]

Syntax: stop_group name

193. quiesce_group

Quiesces all cross-connects one or all test groups See Also: add_group, add_tgcx, stop_group

Related Commands

`postexec_cli`	`show_cx %{name} all`

Argument	Description
name	The name of the test group, or 'all' [R]

Syntax: quiesce_group name

194. stop_ppp_link

Stop a PppLink.

Argument	Description
shelf	Name/id of the shelf. [R][D:1]
resource	Resource number that holds this PppLink. [W]
unit_num	Unit-Number for the PppLink to be stopped. [W]

Syntax: stop_ppp_link shelf resource unit_num

195. set_endp_tos

Set the IP Type of Service (TOS) byte for this Endpoint. Only valid for TCP/IP and UDP/IP based endpoint types. You should consult RFC-791, RFC-1349 and RFC-2474 for ideas of what this value can and should be.

RFC 1394 standard TOS settings can be entered by name:

`LOWDELAY`	#
`THROUGHPUT`	#
`RELIABILITY`	#
`LOWCOST`	#

You may also instruct the Endpoint to NOT set any TOS with the TOS keyword: `DONT-SET`. This will make the Endpoint use the kernel defaults. If you have already set the TOS, then you must stop and restart the Endpoint to have the new default values take affect.

For **Priority**, please read the Linux socket man page: `man 7 socket`

Argument	Description
name	The name of the endpoint we are configuring. [R]
TOS	The Type of Service, can be HEX, see above.
priority	The socket priority, can be any positive number.

Syntax: set_endp_tos name TOS priority

196. set_endp_quiesce

Set the quiesce timer. This determines how long an endpoint will wait in a quiet state before stopping the test. This is good for gracefully finishing the last transaction and allowing all the packets in flight to be received by the receiving end (which continues to function as normal during the quiesce.) Use `set_cx_state` to actually put the endpoint in quiesce state.

Argument	Description
name	The name of the endpoint we are configuring. [R]
quiesce	The number of seconds to quiesce this endpoint when told to quiesce. [R]

Syntax: set_endp_quiesce name quiesce

197. set_endp_pld_bounds

Set the min/max payload size bounds for an endpoint. If the endpoint payload size is set to 'random', then the actual sizes will vary with an even distribution between the min and max. If the payload size is not random, it will always be the minimum payload size, as set here.

Argument	Description
name	The name of the endpoint we are configuring. [R]
min_pld_size	The minimum payload size, in bytes.
max_pld_size	The maximum payload size, in bytes.
is_random	YES if random, anything else for NO.
use_checksum	YES if use checksum on payload, anything else for NO.

Syntax: set_endp_pld_bounds name min_pld_size max_pld_size is_random use_checksum

198. set_endp_tx_bounds

Set the min/max transmit rate bounds for an endpoint. If the endpoint transmit rate is set to 'bursty', then the actual rates will vary between the min and max in a bursty fashion. If the rate is not bursty, it will always be the minimum rate, as set here.

Argument	Description
name	The name of the endpoint we are configuring. [R]
min_tx_rate	The minimum transmit rate, in bits per second (bps).
max_tx_rate	The maximum transmit rate, in bits per second (bps).
is_bursty	YES if bursty, anything else for NO.

Syntax: set_endp_tx_bounds name min_tx_rate max_tx_rate is_bursty

199. set_fe_info

Set read/write size and other file information for File Endpoints. You can also enter 'NA' for any value you do not wish to change. The quiesce-after-files option allows one to configure the test to automatically stop after completing a certain number of file reads or writes. The default is zero (0), which means run forever until stopped by user.

Argument	Description
name	The name of the file endpoint we are configuring. [R]
min_rw_sz	Minimum read/write size, in bytes.
max_rw_sz	Maximum read/write size, in bytes.
num_files	Number of files to create when writing.
min_file_size	The minimum file size, in bytes.
max_file_size	The maximum file size, in bytes.
directory	The directory to read/write in. Absolute path suggested.
prefix	The prefix of the file(s) to read/write.
io_direction	Should we be reading or writing: options: read, write
quiesce_after_files	If non-zero, quiesce test after this many files have been read/written.

Syntax: set_fe_info name min_rw_sz max_rw_sz num_files min_file_size max_file_size directory prefix io_direction quiesce_after_files

200. set_gen_cmd

Set command that will be executed when this generic endpoint is started. Example:

```
set_gen_cmd fio-endp bonnie++ -f -d /mnt/test_fs/ -q
```

Argument	Description
name	The name of the file endpoint we are configuring. [R]
command	The rest of the command line arguments. `Unescaped Value` [R]

Syntax: set_gen_cmd name command

201. set_endp_flag

This command allows you to modify certain Endpoint specific options, including Unmanaged. Different endpoint types will support different options. To get a full listing of options, use the command without specifying a flag. Example:

```
[default@btbits] set_endp_flag t0100-A
Endpoint: Shelf: 1, Card: 1  Port: 6  Endpoint: 1  Type: LANFORGE_UDP
  Unmanaged(0)  DoChecksum(0)  KernelMode(0)
   ClearPortOnStart(0) EnableRndSrcIP(0)
   EnableLinearSrcIP(0) EnableConcurrentSrcIP(0)
   UseAutoNAT(0) EnableLinearSrcIPPort(0)
   QuiesceAfterRange(0) QuiesceAfterDuration(0)
```

Notice how you need to place endpoint-A or endpoint-B to use command.

```
All endpoints:
  Unmanaged              |# Set endpoint unmanaged
  DoChecksum             |# Enable checksumming
  KernelMode             |# Enable kernel mode
  ClearPortOnStart       |# clear stats on start

Layer 3 Endpoints:
  EnableRndSrcIP         |# randomize source IP
  EnableLinearSrcIP      |# linearized source IPs
  EnableConcurrentSrcIP  |# Concurrent source IPs?
  UseAutoNAT             |# NAT friendly behavior
  EnableLinearSrcIPPort  |# linearized IP ports
  QuiesceAfterRange      |# quiesce after range of bytes
  QuiesceAfterDuration   |# quiesce after time period
  AutoHelper             |# Automatically run on helper process
  EnableTcpNodelay       |# Enable no delay with TCP.
  UseMulticastSSM        |# Use Source Specific Multicast.
  UdpBurst               |# Use UDP Bursting
  UseGRO                 |# Enable UDP GRO
  AdvLatency             |# Enable Advanced Latency Reporting
  ReplayOverwriteDstMac  |# Overwrite the Destination MAC when replaying packets

File endpoints:
  SyncAfterWrite         |# Sync after writing to a file
```

```
  SyncBeforeClose       |# Sync before closing a file

Layer 4 endpoints:
  UseProxy              |# Use Proxy IP if L4 Endpoint
  GetUrlsFromFile       |# Get URL's from file
  VerifySSLServer       |# Veify the SSL sever
  ReuseSocket           |# Reuse current socket
  L4Enable404           |# Enable L4 Endpoint JSON return status 404

WANlink endpoints:
  ReplayWlCapture       |# Use Replay Capture
  ReplayLoop            |# Replay loop.
  IgnoreBandwidth       |# WANLink behavior replay
  IgnoreLoss            |# Ignore replay loss
  IgnoreLatency         |# Ignore replay latency
  IgnoreDup             |# Ignore replay dup
  ForcePktGap           |# Force packet gap. Used by WANlinks currently.
  CoupledMode           |# Reduces config on a specific endpoint on WANlink
  PassthroughMode       |# Disable and pass packets through one side of WANlink
  HWPassthroughMode     |# Uses hardware pass through similar to PassthroughMode
  DropXthPkt            |# Drop every Nth packet on a WANpath endpoint. This
                        #  feature is WANlink endpoint based and not WANpath ba
  FollowBinomialDist    |# Packet drop/ok burst lengths should follow a binomial
                        #  distribution. This feature is WANlink endpoint based
                        #  not WANpath based.

VoIP endpoints:
  SavePCM               |# Enable to save received bits to file
  PlayAudio             |# Enable to play sound to audio card
  RcvCallOnly           |# Enable to receive calls only, do not originate calls
  DoNotAnswer           |# Do not pick up
  BindSIP               |# if SIP is in DUT, true. Default is false.
  DoNotRegister         |# Used for peer-to-peer calling. If set, consider setti
                        #  previous command to true as well, unless calling a r
                        #  LANforge system.
  SipPortAuto           |# Set local SIP port to auto
  NoSendRtp             |# Set to not send RTP
  PESQ                  |# Enable PESQ
  VAD                   |# Enable VAD
  NoFastStart           |# Set to disable h323 fast start
  NoTunneling           |# Set to disable h323 tunneling
  PeerNotAuto           |# Set if peer phone number is not auto
  SingleCodec           |# Set to only use specified Codec
  OverrideSdp           |# Set to override conneciton info in SDP
  Mobile                |# Set to represent endpoint as cellular-call, hands fre
  NoBluetooth           |# If set, record and play audio options will be through
                        #  wireless connection (bluetooth).
  NoPlayAudioOverCall   |# if set, no audio will be played over call.
```

Argument	Description

name	The name of the endpoint we are configuring. [R]
flag	The name of the flag. [R]
val	Either 1 (for on), or 0 (for off). [R,0-1]

Syntax: set_endp_flag name flag val

202. set_flag

This command allows you to modify certain client specific options, including the brevity of the output. Some useful flags are:

```
brief                |# Request more abbreviated output to various commands.
                     # If enabled, the 'RSLT>>' CLI response will be hidden, fo

push_endp_rpts       |# If enabled, server will send endpoint reports without
                     # being asked.  This may be more information than you want

push_all_rpts        |# If enabled, server will send port, endpoint, and other
                     # reports without being asked.  This can flood scripts if
                     # they are not expecting the input.

prompt_newlines      |# Add a newline after every prompt.  Can help with scripts
                     # that want to handle line-based input.

stream_events        |# Normally the CLI will not show Events (as seen in the Ev
                     # tab in the GUI) as they happen to keep the text output
                     # cleaner.  But, this option can be enabled by toggling th
                     # stream_events flag on.

request_keyed_text   |# Normally most keyed-text events are only sent to the GUI
                     # (binary) clients.  Enable 'request_keyed_text' to have t
                     # events sent to the CLI session as well.
```

To get a full listing of options, use the set_flag command without any arguments.

Argument	Description
flag	The name of the flag. [R]
val	Either 1 (for on), or 0 (for off). [R,0-1]
client	Specify the user, if it is not the current user. Requires admin privileges.

Syntax: set_flag flag val client

203. set_gps_info

This command sets the position of the device: latitude, longitude, and altitude. You can manually enter the value for stationary equipment, or you can hook your LANforge device up to a GPS receiver for real-time updates. The values come from the $GPGGA line, as defined by the NMEA protocol. Shelf can be 'SELF' when talking to data-generators, and it will set itself.

Argument	Description
shelf	Shelf number for the port to be modified, or SELF. [R][D:1]
resource	Resource number for the port to be modified. [W]
lattitude	The lattitude, as read from a GPS device.
ns	North or South (Latitude).
longitude	The longitude, as ready from a GPS device.
ew	East or west (Longitude).
altitude	Altitude, assumes units are Meters.

Syntax: set_gps_info shelf resource lattitude ns longitude ew altitude

204. set_poll_mode

When set to polling mode, LANforge will not generate reports unless asked. This is more efficient for very large numbers of connections and works fine for smaller configurations too. Non-polling mode works fine up to about 500 cross-connects on high-end hardware.

Polling Modes:

```
polling  |#
push     |#
```

Argument	Description
mode	'polling' or 'push'. [R]

Syntax: set_poll_mode mode

205. set_port

This command allows you to modify attributes on an Ethernet port. These options includes the IP address, netmask, gateway address, MAC, MTU, and TX Queue Length.

In order for this command to succeed the Endpoints which are using the port must not be running. Endpoints which use IP will be updated automatically with the appropriate information if the port is modified.

If you do not wish to modify one or more of the settings, enter 'NA' instead of a real value.

For the flags entries, add up as many flags as you wish to set, and enter the sum. For example, if you want to set flag 1, 2, and 8, then enter: 11, or `0xB`.

When setting the link speed with **current_flags**, use one of the Fixed flags and don't set auto-negotiate for fixed mode, or set as many of the advert flags as you wish and set auto-negotiate for auto-negotiate mode.

Normally, you will advertise everything your resource is capable of.

current_flags can be:

```
if_down           | 0x1                # Interface Down
fixed_10bt_hd     | 0x2                # Fixed-10bt-HD (half duplex)
fixed_10bt_fd     | 0x4                # Fixed-10bt-FD
fixed_100bt_hd    | 0x8                # Fixed-100bt-HD
fixed_100bt_fd    | 0x10               # Fixed-100bt-FD
auto_neg          | 0x100              # auto-negotiate
adv_10bt_hd       | 0x100000           # advert-10bt-HD
adv_10bt_fd       | 0x200000           # advert-10bt-FD
adv_100bt_hd      | 0x400000           # advert-100bt-HD
adv_100bt_fd      | 0x800000           # advert-100bt-FD
adv_flow_ctl      | 0x8000000          # advert-flow-control
promisc           | 0x10000000         # PROMISC
use_dhcp          | 0x80000000         # USE-DHCP
adv_2.5g_fd       | 0x400000000        # advert-2.5G-FD
adv_10g_fd        | 0x800000000        # advert-10G-FD
tso_enabled       | 0x1000000000       # TSO-Enabled
lro_enabled       | 0x2000000000       # LRO-Enabled
gro_enabled       | 0x4000000000       # GRO-Enabled
ufo_enabled       | 0x8000000000       # UFO-Enabled
gso_enabled       | 0x10000000000      # GSO-Enabled
use_dhcpv6        | 0x20000000000      # USE-DHCPv6
rxfcs             | 0x40000000000      # RXFCS
no_dhcp_rel       | 0x80000000000      # No-DHCP-Release
staged_ifup       | 0x100000000000     # Staged-IFUP
http_enabled      | 0x200000000000     # Enable HTTP (nginx) service for this po
ftp_enabled       | 0x400000000000     # Enable FTP (vsftpd) service for this po
aux_mgt           | 0x800000000000     # Enable Auxillary-Management flag for th

no_dhcp_restart   | 0x1000000000000    # Disable restart of DHCP on link connect
                                       # This should usually be enabled when tes
                                       # roaming so that the wifi station can ro
                                       # without having to re-acquire a DHCP lea
                                       # time it roams.

ignore_dhcp       | 0x2000000000000    # Don't set DHCP acquired IP on interface
                                       # instead print CLI text message. May be
                                       # in certain wifi-bridging scenarios when
                                       # traffic-generator cannot directly suppo

no_ifup_post      | 0x4000000000000    # Skip ifup-post script if we can detect
                                       # have roamed. Roaming  is considered tru
                                       # the IPv4 address has not changed.

radius_enabled    | 0x20000000000000   # Enable RADIUS service (using hostapd as
ipsec_client      | 0x40000000000000    # Enable client IPSEC xfrm on this port.
ipsec_concentrator | 0x80000000000000   # Enable concentrator (upstream) IPSEC x
service_dns       | 0x100000000000000  # Enable DNS (dnsmasq) service on this p
adv_5g_fd         | 0x400000000000000  # Advertise 5Gbps link speed.
```

cmd_flags can be:

```
reset_transceiver | 0x1                # Reset transciever
restart_link_neg  | 0x2                # Restart link negotiation
```

```
force_MII_probe   | 0x4               # Force MII probe
no_hw_probe       | 0x8               # Don't probe hardware
probe_wifi        | 0x10              # Probe WIFI
new_gw_probe      | 0x20              # Force new GW probe
new_gw_probe_dev  | 0x40              # Force new GW probe for ONLY this interf
from_user         | 0x80              # from_user (Required to change Mgt Port
                                      # (IP, DHCP, etc)

skip_port_bounce  | 0x100             # skip-port-bounce  (Don't ifdown/up
                                      # interface if possible.)

from_dhcp         | 0x200             # Settings come from DHCP client.
abort_if_scripts  | 0x400             # Forceably abort all ifup/down scripts c
use_pre_ifdown    | 0x800             # Call pre-ifdown script before bringing
```

The **interest** flags are normally not needed by casual users. They are used to ignore certain arguments or flags.

interest flag values are:

```
command_flags     |  0x1              # apply command flags
current_flags     |  0x2              # apply current flags
ip_address        |  0x4              # IP address
ip_Mask           |  0x8              # IP mask
ip_gateway        |  0x10             # IP gateway
mac_address       |  0x20             # MAC address
supported_flags   |  0x40             # apply supported flags
link_speed        |  0x80             # Link speed
mtu               |  0x100            # MTU
tx_queue_length   |  0x200            # TX Queue Length
promisc_mode      |  0x400            # PROMISC mode
interal_use_1     |  0x800            # (INTERNAL USE)
alias             |  0x1000           # Port alias
rx_all            |  0x2000           # Rx-ALL
dhcp              |  0x4000           # including client-id.
rpt_timer         |  0x8000           # Report Timer
bridge            |  0x10000          # BRIDGE
ipv6_addrs        |  0x20000          # IPv6 Address
bypass            |  0x40000          # Bypass
gen_offload       |  0x80000          # Generic offload flags, everything but I
cpu_mask          |  0x100000         # CPU Mask, useful for pinning process to
lro_offload       |  0x200000         # LRO (Must be disabled when used in Wanl
                                      # and probably in routers)

sta_br_id         |  0x400000         # WiFi Bridge identifier.  0 means no bri
ifdown            |  0x800000         # Down interface
dhcpv6            |  0x1000000        # Use DHCPv6
rxfcs             |  0x2000000        # RXFCS
dhcp_rls          |  0x4000000        # DHCP release
svc_httpd         |  0x8000000        # Enable/disable HTTP Service for a port
svc_ftpd          |  0x10000000       # Enable/disable FTP Service for a port
aux_mgt           |  0x20000000       # Enable/disable Auxillary-Management for
no_dhcp_conn      |  0x40000000       # Enable/disable NO-DHCP-ON-CONNECT flag
```

```
no_apply_dhcp     |  0x80000000        # Enable/disable NO-APPLY-DHCP flag for a
skip_ifup_roam    |  0x100000000       # Enable/disable SKIP-IFUP-ON-ROAM flag f
```

flags2 values are:

```
use_stp            | 0x1              # Use Spanning Tree Protocol
supports_bypass    | 0x2              # Support Bypass Devices
bypass_enabled     | 0x10             # Enable Bypass Device
bypass_power_down  | 0x80             # Should bypass be on when we shutdown or
bypass_power_on    | 0x100            # Should bypass be on when we first power
bypass_disconnect  | 0x200            # Logically disconnect the cable (link-do
```

IPv6 Address format is: `addr/prefix` Scope is implied by the position (first address is global, etc).

NOTE: You may create custom dhclient config files if you need more flexibility than the built-in features LANforge supports.

dhcp_vendor_id:

```
NA         | # Do not change from current value.
NONE       | # Do not use dhcp vendor ID
[string]   | # Use the string for the vendor ID.
```

dhcp_hostname:

```
NA         | # Do not change from current value.
NONE       | # Do not use dhcp Hostname
__EID__    | # Use hostname 'CT-[resource-id].[port-name]'
__ALIAS__  | # Use alias if set, or EID behaviour if alias is not set..
[string]   | # Use the string for the Hostname.
```

dhcp_client_id:

```
NA         | # Do not change from current value.
NONE       | # Do not use dhcp client ID.
__MAC      | # Use interface's MAC address for the client ID.
__DEVNAME  | # Use the interface's name as the client ID.
[string]   | # Use the string for the client ID.
```

Related Commands

```
preexec_method  | baseCheckPortExists
postexec_cli    | nc_show_ports %{shelf} %{resource} %{port}
```

Argument	Description
shelf	Shelf number for the port to be modified. [R][D:1]
resource	Resource number for the port to be modified. [W]
port	Port number for the port to be modified. [W]
ip_addr	IP address for the port, or NA.
netmask	Netmask which this port should use, or NA.

gateway	IP address of the gateway device - used for IP routing, or NA.
cmd_flags	Command Flags: See above, or NA.
current_flags	See above, or NA.
MAC	MAC address to set this port to, or leave blank to not set it, or NA.
MTU	Maximum Transmit Unit (MTU) for this interface. Can be blank or NA.
tx_queue_len	Transmit Queue Length for this interface. Can be blank or NA.
alias	A user-defined name for this interface. Can be BLANK or NA.
interest	Which things are we really interested in setting. Can over-ride defaults based on the other arguments.
report_timer	How often, in milliseconds, should we poll stats on this interface?
flags2	Bridge & other flags, see above.
br_priority	Bridge priority, 16-bit number.
br_aging_time	MAC aging time, in seconds, 32-bit number (or peer IP for GRE).
br_max_age	How long until STP considers a non-responsive bridge dead.
br_hello_time	How often does the bridge send out STP hello packets.
br_forwarding_delay	How long to wait until the bridge will start forwarding packets.
br_port_cost	STP Port cost for a port (this applies only to NON-BRIDGE interfaces).
br_port_priority	STP Port priority for a port (this applies only to NON-BRIDGE interfaces).
IPv6_addr_global	Global scoped IPv6 address.
IPv6_addr_link	Link scoped IPv6 address.
IPv6_dflt_gw	IPv6 default gateway.

bypass_wdt	Watch Dog Timer (in seconds) for this port. Zero (0) to disable.
cpu_mask	CPU Mask for CPUs that should service this interface. Zero is don't set (let OS make the decision). This value will be applied to the proper /proc/irq/[irq-num]/smp_affinity file by the pin_irq.pl script.
dns_servers	DNS servers for use by traffic on this port, comma-separated list, BLANK means zero-length string.
sta_br_id	WiFi STAtion bridge ID. Zero means none.
dhcp_client_id	Optional string of up to 63 bytes in length to be passed to the dhclient process. See above.
current_flags_msk	This sets 'interest' for flags 'Enable RADIUS service' and higher. See above, or NA.
dhcp_vendor_id	Optional string of up to 63 bytes in length to be passed to the dhclient process. See above.
ipsec_concentrator	IP Address of IPSec concentrator.
ipsec_passwd	Password for IPSec, for pubkey, use: pubkey:[pem-filename], for instance: pubkey:station.pem
ipsec_local_id	Local Identifier for this IPSec tunnel.
ipsec_remote_id	Remote Identifier for this IPSec tunnel.
dhcp_hostname	Optional string of up to 63 bytes in length to be passed to the dhclient process. Option 12, see above.

Syntax: set_port shelf resource port ip_addr netmask gateway cmd_flags current_flags MAC MTU tx_queue_len alias interest report_timer flags2 br_priority br_aging_time br_max_age br_hello_time br_forwarding_delay br_port_cost br_port_priority IPv6_addr_global IPv6_addr_link IPv6_dflt_gw bypass_wdt cpu_mask dns_servers sta_br_id dhcp_client_id current_flags_msk dhcp_vendor_id ipsec_concentrator ipsec_passwd ipsec_local_id ipsec_remote_id dhcp_hostname

206. set_port2

Set additional port configuration for existing port. The dhclient_50 syntax must be like this, including spaces: 1, 2, 3, 4 Surround it with single quotes when sending through LANforge CLI.

Argument	Description
shelf	Shelf number for the port to be modified. [R][D:1]
resource	Resource number for the port to be modified. [W]
port	Port identifier. [R]
dhclient_50	Set DHCP Client option-50 text. DEFAULT means do not use this option.

Syntax: set_port2 shelf resource port dhclient_50

207. set_port_alias

Set the alias for a virtual interface specified by MAC or 802.1Q VLAN-ID. This command is designed to make it easier to script MAC an 802.1Q VLANs

Related Commands

```
preexec_method  | baseCheckPortExists
postexec_cli    | nc_show_port %{shelf} %{resource} %{port}
```

Argument	Description
shelf	Shelf number for the port to be modified. [R][D:1]
resource	Resource number for the port to be modified. [W]
port	Physical Port identifier that owns the virtual interface. [R]
vport	Virtual port identifier. MAC for MAC-VLANs, VLAN-ID for 802.1Q vlans.
alias	New alias to assign to this virtual interface. [W]

Syntax: set_port_alias shelf resource port vport alias

208. set_sec_ip

Set a new list secondary IP Address(es). Only makes necessary incremental changes to have the requested configuration.

Related Commands

```
preexec_method  | baseCheckPortExists
postexec_cli    | nc_show_port %{shelf} %{resource} %{port}
```

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of network device (Port) to which these IPs will be added. [R]
ip_list	IP1/prefix,IP2/prefix,...IPZ/prefix. [W]

Syntax: set_sec_ip shelf resource port ip_list

209. set_voip_info

Set various VOIP endpoint related values. Use this to enable behaviour different from the defaults (see add_voip_endp, and set_endp_flag). If the min and max values are different, a random value in that range will be chosen. Any values can be 'NA' and they will be ignored. If min/max_call_duration is less than the length of the wave file multiplied by the number of times to play the wave file, then the max_call_duration will determine the call length. If Min/Max call duration are not the same, a random value between the min and max will be chosen each time a call is started. Otherwise, the call will be determined by the wave file size & repetition. The registration expire timer affects the sip messaging protocol: The default of 300 is fine in most cases. The sound_dev determines which sound device to play the received RTP stream on. Usually /dev/dsp or /dev/audio is the correct value.

Argument	Description
name	The name of the endpoint we are configuring. [R]
first_call_delay	How long to wait before making first call, in seconds.
min_inter_call_gap	Minimum time to wait between calls, in seconds.
max_inter_call_gap	Maximum time to wait between calls, in seconds.
reg_expire_timer	SIP Registration expire timer, in seconds.
codec	Codec to use for the voice stream, supported values: G711U, G711A, SPEEX, g726-16, g726-24, g726-32, g726-40, g729a.
messaging_protocol	Messaging protocol, supported values: SIP.
loop_call_count	How many calls to make, zero means infinite.
loop_wavefile_count	How many times to play the wave file, zero means infinite.
min_call_duration	How long should the call be, in seconds.

max_call_duration	How long should the call be, in seconds.
sound_dev	Which sound device should we play sound to. (see set_endp_flags).
ringing_timer	How long (milliseconds) to wait in the ringing state before flagging call as no-answer.
local_sip_port	Local SIP UDP port. Default is min-rtp-port + 2.
PESQ_server_IP	LANforge PESQ server IP address.
PESQ_server_port	LANforge PESQ server port, default is 3998.
PESQ_server_passwd	LANforge PESQ server password. Default is to use no authentication (blank entry).
jitter_buffer_sz	The size of the jitter buffer in packets. Default value is 8.

Syntax: set_voip_info name first_call_delay min_inter_call_gap max_inter_call_gap reg_expire_timer codec messaging_protocol loop_call_count loop_wavefile_count min_call_duration max_call_duration sound_dev ringing_timer local_sip_port PESQ_server_IP PESQ_server_port PESQ_server_passwd jitter_buffer_sz

210. set_wanpath_filter

Set the filter type for the WanPath. If the filter is set to MAC, then it will match based on the source and/or destination MAC address.

If IP is chosen, it will match on the source and destination IP addresses and masks. Default behaviour is to match on the IP address. MAC syntax is: `00:11:22:33:44:55` IP Syntax is: a.b.c.d/24 or a.b.c.d/255.255.255.0 PCAP syntax is same as for tcpdump. Use 'man tcpdump' on Linux, or see this page: http://www.tcpdump.org/tcpdump_man.html The 'passive' argument is to allow you to set the pcap filter, but not actually use it (perhaps you are using IP filtering, but we want to remember the pcap filter for later.)

Argument	Description
wl_name	The name of the WanLink endpoint we are configuring. [R]
wp_name	The name of the WanPath we are configuring. [R]
filter_type	The filter type, one of: MAC, IP, PCAP.
src_filter	The source MAC or IP/Mask. For PCAP, this is the only filter.

dst_filter	The destination MAC or IP/Mask, 'NA' for PCAP.
reverse	If you want the logic reversed, use 'ON', otherwise set to 'OFF'
defer_flush	Enter 'YES' if you do NOT want this flushed to the remote.
passive	Enter 'YES' if you do NOT want to use this filter currently.

Syntax: set_wanpath_filter wl_name wp_name filter_type src_filter dst_filter reverse defer_flush passive

211. set_wanpath_running

Set the Running state of the WanPath. If the state is set to:

```
AS_PARENT   | # then it will be started and stopped as the parent WanLink is.
STOPPED     | # then it will not be running at any time.
RUNNING     | # then it will be running at all times
```

Though, due to implementation, it may not actually pass any traffic if the parent WanLink is not running.

Argument	Description
wl_name	The name of the WanLink endpoint we are configuring. [R]
wp_name	The name of the WanPath we are configuring. [R]
running	The state, one of: AS_PARENT, RUNNING, STOPPED. [R]

Syntax: set_wanpath_running wl_name wp_name running

212. set_wanpath_corruption

Set a corruption for a WanPath. Corruptions include random and fixed overwrite of a byte in the Ethernet frame, as well as random bit-flips and bit transposes. Up to 6 corruptions are supported per WanLink. If the 'chain' flag is set on a corruption, then if that corruption is chosen to be applied, the next corruption will always be applied. The 'byte' specifies the byte to write into the frame, if OVERWRITE_FIXED flag is chosen. The min and max offset determine the possible position of the byte to be modified. If min is less than max, a random byte between min and max will be modified. The offset is from the beginning of the Ethernet header. The 'rate' specifies how often, per million, the corruption will be applied. This is flat-random distribution. The flags are defined as:

```
OVERWRITE_RANDOM  | 1     # Write a random value to a byte.
OVERWRITE_FIXED   | 2     # Write a fixed value to a byte.
BIT_FLIP          | 4     # Flip a random bit in a byte.
```

```
BIT_TRANSPOSE     | 8     # Transpose two side-by-side bits in a byte.
DO_CHAIN_ON_HIT   | 16    # Do next corruption if this corruption is applied.
RECALC_CSUMS      | 32    # Attempt to re-calculate UDP and TCP checksums.
```

The RECALC_CSUMS option will ONLY work if the UDP or TCP packet spans a single Ethernet frame.

Only one of the first 4 bits should be selected. Add flag values together to set multiple flags.

Argument	Description
name	WanLink name [R]
path	WanPath name [R]
index	The corruption to modify (0-5). [R,0-5]
flags	The flags for this corruption.
byte	The byte to use for OVERWRITE_FIXED (or NA).
min_offset	The minimum offset from start of Ethernet packet for the byte to be modified.
max_offset	The maximum offset from start of Ethernet packet for the byte to be modified.
rate	Specifies how often, per million, this corruption should be applied.

Syntax: set_wanpath_corruption name path index flags byte min_offset max_offset rate

213. set_wanlink_info

Set the WanLink information for an endpoint. You can set the Latency, MaxJitter, and reorder characteristics here. Special attention should be paid to extra_buffer. This setting should be zero, or a small number, if you are doing latency-sensitive testing. Use -1 if you want LANforge to automatically configure a proper extra_buffer size based on your maximum bandwidth. The server will add the extra_buffer size to a calculated buffer size based on the maximum jitter and latency specified in the WanLink endpoint. If you wish to drop bursts of packets, then set the min_drop_amt and max_drop_amt. When LANforge determines that a packet drop should occur (based on the drop_freq), then it will also pick a random value between the min and max drop_amt and drop that many packets in a row. The value of all attributes other than the name can be 'NA', which means do not change the current value.

Argument	Description
name	The name of the endpoint we are configuring. [R]
speed	The maximum speed of traffic this endpoint will accept (bps).

latency	The base latency added to all packets, in milliseconds (or add 'us' suffix for microseconds
max_jitter	The maximum jitter, in milliseconds (or ad 'us' suffix for microseconds)
reorder_freq	How often, out of 1,000,000 packets, should we make a packet out of order.
extra_buffer	The extra amount of bytes to buffer before dropping pkts, in units of 1024. Use -1 for AUTO.
drop_freq	How often, out of 1,000,000 packets, should we purposefully drop a packet.
dup_freq	How often, out of 1,000,000 packets, should we purposefully duplicate a packet.
playback_capture_file	Name of the WAN capture file to play back.
jitter_freq	How often, out of 1,000,000 packets, should we apply jitter.
min_drop_amt	Minimum amount of packets to drop in a row. Default is 1.
max_drop_amt	Maximum amount of packets to drop in a row. Default is 1.
min_reorder_amt	Minimum amount of packets by which to reorder, Default is 1.
max_reorder_amt	Maximum amount of packets by which to reorder, Default is 10.
max_lateness	Maximum amount of un-intentional delay before pkt is dropped. Default is AUTO

Syntax: set_wanlink_info name speed latency max_jitter reorder_freq extra_buffer drop_freq dup_freq playback_capture_file jitter_freq min_drop_amt max_drop_amt min_reorder_amt max_reorder_amt max_lateness

214. set_wanlink_pcap

Set the WanLink packet capture file name, and whether or not the system should actually capture the packets. The generated files for both WanLink endpoints can then be played back across a network using the LANforge playback features. The capture will start and stop with the endpoint, and it will write over any existing file so be careful. To mitigate the risk, if the path is absolute, it must start with /tmp or /home/lanforge. To effectively store files elsewhere, you can set up soft-links to directories within one of these directory trees.

Capture Options:

```
ON     |# start capturing
OFF    |# stop capturing
```

Argument	Description
name	The name of the endpoint we are configuring. [R]
capture	Should we capture or not? ON or OFF. [R]
directory	The directory name in which packet capture files will be written.

Syntax: set_wanlink_pcap name capture directory

215. set_wl_corruption

Set a corruption for WanLink. Corruptions include random and fixed overwrite of a byte in the Ethernet frame, as well as random bit-flips and bit transposes. Specific rules apply:

- Up to 6 corruptions are supported per WanLink.
- If the `chain` flag is set on a corruption, then if that corruption is chosen to be applied, the next corruption will always be applied.
- If `OVERWRITE_FIXED` flag is chosen, the 'byte' specifies the byte to write into the frame.

The `min_offset` and `max_offset` determine the possible position of the byte to be modified. If min is less than max, a random byte between min and max will be modified. The offset is from the beginning of the Ethernet header.

The `rate` specifies how often, per million, the corruption will be applied. This is flat-random distribution.

The **flags** are defined as:

```
OVERWRITE_RANDOM | 1      # Write a random value to a byte.
OVERWRITE_FIXED  | 2      # Write a fixed value to a byte.
BIT_FLIP         | 4      # Flip a random bit in a byte.
BIT_TRANSPOSE    | 8      # Transpose two side-by-side bits in a byte.
DO_CHAIN_ON_HIT  | 16     # Do next corruption if this corruption is applied.
RECALC_CSUMS     | 32     # Attempt to re-calculate UDP and TCP checksums.
```

The RECALC_CSUMS option will ONLY work if the UDP or TCP packet spans a single Ethernet frame.

Only one of the first 4 bits should be selected. Add flag values together to set multiple flags.

Argument	Description
name	WanLink name [R]
index	The corruption to modify (0-5). [R,0-5]
flags	The flags for this corruption.

byte	The byte to use for OVERWRITE_FIXED (or NA).
min_offset	The minimum offset from start of Ethernet packet for the byte to be modified.
max_offset	The maximum offset from start of Ethernet packet for the byte to be modified.
rate	Specifies how often, per million, this corruption should be applied.

Syntax: set_wl_corruption name index flags byte min_offset max_offset rate

216. set_wl_qdisc

Set a Queuing Discipline on the WanLink.

```
FIFO                    | # is the default queuing discipline, no arguments
WRR,[queue,queue,...]   | # Weighted Round Robbin is also available
```

For `WRR` you must specify the weights (and in doing so, the number of queues):

```
set_wl_qos [wanlink] WRR,10000,10000,10000,10000,500000,600000,600000
```

The packet priority will be mapped directly onto the queues. If the packet priority cannot be queried from the OS, the 3 IP ToS bits will be used for priority, so we recommend 7 queues for `WRR` QDiscs.

Others queuing disciplines may be added in the future.

Argument	Description
name	WanLink name [R]
qdisc	FIFO, WRR,a,b,c,d,e,f,g etc [R]

Syntax: set_wl_qdisc name qdisc

217. set_endp_file

Set the file name for an endpoint. In the future, this may affect various endpoint types differently, but for now it is only used to set the capture file that a Custom Ethernet endpoint can 'play back'. To use this feature, first use a WanLink connection to capture packets flowing across a network. The WanLink connections can be configured to save all incoming packets to a file. The Customer Ethernet connection can then be configured with one of the capture files associated with each endpoint. During playback, each endpoint will play back the packet stream as it arrived, inserting pauses between the packets, and ensuring that packets are placed on the wire in the same order that they were received. file can be blank or NA if you wish to only turn playback on or off.

Playback options:

```
ON     |# on
OFF    |# off
```

Argument	Description
name	The name of the endpoint we are configuring. [R]
playback	Should we playback the capture or not? ON or OFF. [R]
file	The file name to read the playback packets from.

Syntax: set_endp_file name playback file

218. show_attenuators

Show Attenuator information.

Argument	Description
shelf	Shelf number or alias, can be 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
serno	Serial number for requested Attenuator, or 'all'. [W]

Syntax: show_attenuators shelf resource serno

219. show_rfgen

Show RF-Generators configured and/or discovered.

Argument	Description
shelf	Shelf number or alias, can be 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
ID	RF Generator serial number, or 'all'.

Syntax: show_rfgen shelf resource ID

220. show_resources

Show one or all resources for one or all shelves.

Argument	Description
shelf	Shelf number or alias, can be 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]

Syntax: show_resources shelf resource

221. show_clients

Show all unique clients that have registered in the past. Using login, you can become any client on the list, and take on the values of that client. Multiple users can login as the same client, if desired.

Syntax: show_clients

222. show_cx

Show one or all cross-connects for one or all test managers.

Argument	Description
test_mgr	Specify test-mgr to act on, or 'all'. [R]
cross_connect	Specify cross-connect to act on, or 'all'. [W]

Syntax: show_cx test_mgr cross_connect

223. show_cxe

Show one or all cross-connects and their endpoints for one or all test managers. Please note that as of Release 5.2.4 (and earlier), this only returns cached Endpoint values. This means if the GUI is not running or if endpoint results are not otherwise being queried, the returned stats will not be accurate.

Argument	Description
test_mgr	Specify test-mgr to use, or 'all'. [R]
cross_connect	Specify cross-connect to show, or 'all'. [W]

Syntax: show_cxe test_mgr cross_connect

224. show_cd

Show one/all Collision Domains for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. This command will always request the absolute latest information from the remote system(s)

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
collision_domain	Name of the Collision Domain, or 'all'. [W]

Syntax: show_cd shelf resource collision_domain

225. show_rt

Show a Virtual Router's routing table.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
virtual_router	Name of the virtual router. [W]

key	Unique identifier for this request. Usually left blank.

Syntax: show_rt shelf resource virtual_router key

226. show_vr

Show one/all Virtual Routers for one/all resources in one/all shelves. An empty specifier will be treated as 'all'. May use cached values if the values are fresh enough.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
router	Name of the Virtual Router, or 'all'. [W]

Syntax: show_vr shelf resource router

227. show_vrcx

Show one/all Virtual Router Connections for one/all resources in one/all shelves. Only Connections on the 'free-list', those not associated with any Virtual Router will be shown with this command unless the VRCX is specified by name. If the VRCX is in a virtual router, only cached results will be shown. Connections associated with routers will be shown whith the 'show_vr' command with the rest of the router information. Cached values may be used if they are recent enough.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
cx_name	Name of the Virtual Router Connection, or 'all'. [W]

Syntax: show_vrcx shelf resource cx_name

228. show_dbs

Show all available databases that may be loaded.

Syntax: show_dbs

229. show_endpoints

Show one or all endpoints. Some endpoint types take an extra argument to specify what to show more precisely: Generic endpoints check extra for 'history' and in that case they will report recent output, not just the last line of output.

Argument	Description
endpoint	Name of endpoint, or 'all'. [R]
extra	See above.

Syntax: show_endpoints endpoint extra

230. show_script_results

Show results of last script run for one or all endpoints. If using 'all', results will be for all endpoints and test-groups will be skipped entirely.

Argument	Description
endpoint	Name of endpoint, test-group, or 'all'. [R]
key	Optional 'key' to be used in keyed-text message result.

Syntax: show_script_results endpoint key

231. show_pesq

Show PESQ results for one or all VOIP endpoints.

Argument	Description
endpoint	Name of endpoint, or 'all'. [R]

Syntax: show_pesq endpoint

232. show_endp_payload

Show the payloads for one or all endpoints. The results will be shown in HEX. You may specify the number of bytes to print out, or you can just use the default value of 128 by not entering the length. You should not specify a very large length and also use 'ALL' for your endpoint, or you may over-run internal buffers can cause your message to be truncated.

Argument	Description
name	The name of the endpoint we are configuring. [R]
max_bytes	The max number of payload bytes to print out, default is 128. [R][D:128]

Syntax: show_endp_payload name max_bytes

233. show_files

Show files in a particular directory. All paths are relative to the LANforge base directory (usually `/home/lanforge/`). You can also add a filter, such as `*.txt` If `key` is specified, it will be returned as the first line in the response. Directory and filter do not have to be specified, or can be NA to be left at defaults.

```
SORT_BY_TIME  |  1     # Sort by date/time
```

Argument	Description
shelf	The virtual shelf to search in. Use 0 for manager machine. [R,0-1]
resource	The machine to search in. [W]
key	A special key, can be used for scripting.
directory	The sub-directory in which to list.
filter	An optional filter, as used by the 'ls' command.
dir_flags	Determines format of listing, see above.

Syntax: show_files shelf resource key directory filter dir_flags

234. show_ports

Show one/all ports for one/all resources in one/all shelves.

Probe-Flags:

```
WIFI               |     1     # show wifi ports
MII                |     2     # show MII ports
ETHTOOL            |     4     # ethtool results
BRIDGE             |     8     # show bridge ports
EASY_IP_INFO       |     16    # show Everything but gateway, which is expensive
GW                 |     32    # show gateway
GW_FORCE_REFRESH   |     64    # Force GW (re)probe. (Otherwise, cached values *m
DHCP_KEYED_MSG     |     128   # Show (only) the HANDLE_DHCP- keyed message.
```

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
port	Port number, or 'all'. [W]
probe_flags	See above, add them together for multiple probings. Leave blank if you want stats only.

Syntax: show_ports shelf resource port probe_flags

235. show_channel_groups

Show one/all ChannelGroups for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.

Argument	Description

shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
channel_name	Name of the channel, or 'all'. [W]

Syntax: show_channel_groups shelf resource channel_name

236. show_spans

Show one/all Spans for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
span_number	Span-Number of the span, or 'all'. [W]

Syntax: show_spans shelf resource span_number

237. show_ppp_links

Show one/all PPP Links for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.

Argument	Description
shelf	Name/id of the shelf, or 'all'. [R][D:1]
resource	Resource number, or 'all'. [W]
link_num	Ppp-Link number of the span, or 'all'. [W]

Syntax: show_ppp_links shelf resource link_num

238. show_tm

Show one or all test managers.

Argument	Description
test_mgr	Can be name of test manager, or 'all'. [R]

Syntax: show_tm test_mgr

239. show_group

Show one or all Test Groups.

Argument	Description

group	Can be name of test group. Use 'all' or leave blank for all groups.

Syntax: show_group group

240. show_venue

Show one or more venues

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number, or 'ALL' [W]
venu_id	Number to uniquely identify this venue on this resource, or 'ALL' [W]

Syntax: show_venue shelf resource venu_id

241. show_wps

Show one or all WanPaths for one or all WanLink Endpoints.

Argument	Description
endpoint	Name of endpoint, or 'all'. [W]
wanpath	Name of wanpath, or 'all'. [W]

Syntax: show_wps endpoint wanpath

242. shutdown

Restart the LANforge Manager server. Restarting the manager will cause interruption to all of the Resource processes as well. If you want to restart all LANforge processes on the Manager machine, enter 'YES' for the third argument (and probably 'NA' for the second)

Argument	Description
really	Must be 'YES' for command to really work.
chdir	Directory to cd to before dying. Only useful when using gprof to debug, or 'NA' to ignore.
serverctl	Enter 'YES' to do a ./serverctl.bash restart to restart all LANforge processes.

Syntax: shutdown really chdir serverctl

243. shutdown_resource

This will restart the LANforge processes on the resource specified. This will cause all tests that are utilizing that resource to be destroyed. Depending on how the system is set up, the remote resource will probably be restarted in about 5 seconds.

Argument	Description
shelf	Shelf number, or ALL. [R][D:1]
resource	Resource number, or ALL. [W]

Syntax: shutdown_resource shelf resource

244. shutdown_os

This will bring down the Operating System on the resource specified, including all processes running on it. Only a power-cycle will bring it back up again. This command should be used before powering down the LANforge resources. Wait about 1 minute before shutting off the power to allow the OS to bring itself down gracefully. See also: reboot_OS

Argument	Description
shelf	Shelf number, or ALL. [R][D:1]
resource	Resource number, or ALL. [W]

Syntax: shutdown_os shelf resource

245. sniff_port

This will attempt to launch the Wireshark program on the specified port's machine and display Wireshark to the specified X server. Wireshark will be tried first, but if it is not found, Ethereal will be attempted. You must be running X, and have allowed other machines to connect to your X server. If you do not specify the `DISPLAY`, LANforge will attempt to guess it based on your connecting IP address.

For PCs, you can use the exceed program from Hummingbird software.

To enable X access on Unix/Linux, run this command:

```
xhost +
```

This can open your machine to security threats, so read up on `xhost` before you run this command on a mission critical machine not protected by a good firewall!

Flags are defined as follows.

```
TSHARK            |  0x1   # Use command-line tshark instead of wireshark
DUMPCAP           |  0x2   # Use command-line dumpcap, more efficient than tshar
MATE_TERMINAL     |  0x4   # Launch tshark/dumpcap in mate-terminal
MATE_XTERM        |  0x8   # Launch tshark/dumpcap in xterm
MATE_KILL_DUMPCAP | 0x10   # Kill last dumpcap
```

Learn more about Wireshark program.

For questions specific to LANforge, you should contact Candela Technologies.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	The port we are trying to run the packet sniffer on. [R]
display	The DISPLAY option, for example: 192.168.1.5:0.0. Will guess if left blank.
flags	Flags that control how the sniffing is done.
outfile	Optional file location for saving a capture.
duration	Duration for doing a capture (in seconds). Default is 5 minutes for dumpcap/tshark, and forever for wireshark
snaplen	Amount of each packet to store. Default is to store all of it.

Syntax: sniff_port shelf resource port display flags outfile duration snaplen

246. tail

Deal with 'tailing' a file. This is usually going to be a log file.

This displays a GUI popup. This does not stream text to JSON. If you need to see the end of a log file, use logfile

Argument	Description
shelf	Shelf that holds the resource that holds the file. [R][D:1]
resource	Resource that holds the file. [W]
cmd	Command: start, stop, results
key	File-name that we should be tailing.
message	The contents to display (for results only) `Unescaped Value`

Syntax: tail shelf resource cmd key message

247. tm_register

When a client is registered with a test manager, the manager will send the client reports at specified intervals (see set_tm_rpt).

Argument	Description
test_mgr	Name of test manager (can be all.) [R]
client_name	Name of client to be registered. (dflt is current client) [W]

Syntax: tm_register test_mgr client_name

248. tm_unregister

The client will receive no more un-requested reports from the test manager(s).

Argument	Description
test_mgr	Name of test manager (can be all.) [R]
client_name	Name of client to be un-registered. (dflt is current client) [W]

Syntax: tm_unregister test_mgr client_name

249. version

Print out the version of the LANforge server.

Syntax: version

250. wiser_reset

This command will reset the WISER library on the specified machine. This is only useful when running with the Telcordia WISER module.

Argument	Description
shelf	Shelf number, or ALL. [R][D:1]
resource	Resource number, or ALL. [W]

Syntax: wiser_reset shelf resource

251. who

Show who is currently logged into the system.

Syntax: who

252. wifi_event

This is used internally by LANforge to listen for WiFi events.

Argument	Description
device	Interface or PHY in most cases. [R]
event	What happened. [R]
status	Status on what happened.

msg	Entire event in human readable form.

Syntax: wifi_event device event status msg

253. wifi_cli_cmd

LANforge WiFi station interfaces are controlled by the `wpa_supplicant` process, which can be directly manipulated with the `wpa_cli` command. For normal LANforge use, users will not need to deal directly with wpa_supplicant or wpa_cli. For more advanced features, such as roaming, users will need to use wpa_cli commands directly. This LANforge API makes that easier to accomplish.

Example:

```
wifi_cli_cmd 1 1 sta1 'roam 00:00:01:01:01:02'
```

NOTE: These commands will be queued if the interface is phantom, but otherwise the commands will be sent to the wpa_cli command immediately. This can collide with automated LANforge actions such as automatically re-associating and interface that was dropped by the AP. Any configuration changes made by this method will not be saved through restarts of LANforge or even through network interface resets.

If the port is a VAP, then the command will be passed to the hostapd_cli process in a similar manner.

Argument	Description
shelf	Shelf number. [R][D:1]
resource	Resource number. [W]
port	Name of the WiFi station or AP interface to which this command will be directed. [R]
wpa_cli_cmd	Command to pass to wpa_cli or hostap_cli. This must be single-quoted. [R]

Syntax: wifi_cli_cmd shelf resource port wpa_cli_cmd

254. xorpsh

Connect to a Virtual Router's xorpsh shell. The **cmd** parameter value `display` determines what X11 screen the terminal will appear on. (You must be running X windows on the target DISPLAY system.) For `display` mode, the argument is the display address and screen number found in typical DISPLAY environment variables for this instance of xorpsh. Example: `DISPLAY=localhost:10.0`

For 'run_cmd' mode, it is the command (in single quotes) to pass to the xorpsh process.

Argument	Description
shelf	Shelf number. [R][D:1]

resource	Resource number. [W]
router	Name of the virtual router. [R]
cmd	Determines action, current commands: display, run_cmd
arg	See above.

Syntax: xorpsh shelf resource router cmd arg

Candela Technologies, 2417 Main Street, Suite 201, Ferndale, WA 98248, USA
www.candelatech.com | sales@candelatech.com | +1.360.380.1618 Facebook | LinkedIn | Blog Last modified: Wed Sep 27 19:01:37 2023