

## 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. 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'.
1. **add\_arm\_endp** Add an Armageddon (Kernel accelerated UDP) endpoint.
  2. **add\_cx** Add a cross-connect to a test-manager.
  3. **add\_cd** Add an Collision Domain (grouping of WanLinks).
  4. **add\_cd\_endp** Add an Endpoint to a Collision Domain.
  5. **add\_cd\_vr** Add a Virtual Router to a Collision Domain.
  6. **add\_file\_endp** Add a File endpoint to the LANforge Manager.
  7. **add\_gen\_endp** Add a Generic endpoint to the LANforge Manager.
  8. **add\_l4\_endp** Add a Layer-4 endpoint to the LANforge Manager.
  9. **add\_channel\_group** Add a grouping of DS0 channels to be used by PPP connections.
  10. **add\_ppp\_link** Add a PPP interface connection.
  11. **add\_t1\_span** Add a T1/E1 SPAN to the LANforge Manager.
  12. **add\_voip\_endp** Add a VOIP endpoint to the LANforge Manager.
  13. **add\_vr** Add or modify a Virtual Router object.
  14. **add\_vr\_bgp** Add BGP configuration to a virtual router.
  15. **add\_bgp\_peer** Add/Modify BGP peer configuration to a virtual router.
  16. **add\_vrcx** Add or modify a Virtual Router Connection Endpoint object.
  17. **set\_vrcx\_cost** Modify a Virtual Router Connection interface cost.
  18. **add\_endp** Add an endpoint to the LANforge Manager.
  19. **add\_event** Add a new event or modify an existing one.
  20. **add\_br** Add a Linux Bridge Device.
  21. **add\_mvlan** Add a MAC based VLAN (Requires kernel support).
  22. **add\_rdd** Add a Redirect-Device (Requires kernel support).
  23. **add\_gre** Add a GRE Tunnel device.
  24. **add\_sec\_ip** Add or update secondary IP Address(es).
  25. **add\_vlan** Add an 802.1Q VLAN (Requires kernel support).
  26. **add\_sta** Add/modify a WIFI Virtual Station (Virtual STA) interface.
  27. **add\_vap** Add/modify a WIFI Virtual Access Point (VAP) interface.
  28. **add\_tm** Create and add a new test manager to the system.
  29. **add\_wl\_endp** Add a WanLink (ICE) endpoint to the LANforge Manager.
  30. **add\_wanpath** Add a WanPath (ICE) personality to a WanLink.
  31. **admin** Various admin commands.
  32. **apply\_vr\_cfg** Apply all of the virtual routing settings for this Resource.
  33. **cancel\_vr\_cfg** Cancel a virtual-router configuration process for this Resource.
  34. **clear\_cx\_counters** Clear counters for one or all cross-connects.
  35. **clear\_endp\_counters** Clear counters for one or all endpoints.
  36. **clear\_cd\_counters** Clear counters for one or all Collision Domains.
  37. **clear\_port\_counters** Clear counters on one or all ports on one or all resources.
  38. **clear\_resource\_counters** Clear counters on one or all resources.
  39. **clear\_wp\_counters** Clear WanPath counters for one endpoint.
  40. **discover** Force discovery of nodes on the management network.
  41. **diag** Get diagnostic information from the LANforge server.
  42. **notify\_dhcp** Handle input from the DHCP client process.
  43. **do\_pesq** Start a PESQ calculation.
  44. **gossip** Send a message to everyone else logged in to the server.
  45. **getinxrate** Get tx packets per second rate over the last 3 seconds.
  46. **getinxrate** Get rx packets per second rate over the last 3 seconds.
  47. **getinxbps** Get rx bits-per-second per second rate over the last 3 seconds.
  48. **gettxpkts** Get the total tx packets sent.
  49. **getrxpkts** Get the total rx packets sent.
  50. **getpktdrops** Get the total packets dropped (based on sequence number gaps).
  51. **getavlatency** Get the average latency for an endpoint.
  52. **getrxporterrpkts** Get the total error packets detected on the receiving port (interface)
  53. **getrxendperpkts** Get the total error packets detected on the endpoint.
  54. **getipadd** Get the IP for an endpoint.
  55. **getmask** Get the IP Mask for an endpoint.
  56. **getmac** Get the MAC address for an endpoint.
  57. **?** Show help for command(s).
  58. **init\_wiser** Initialize the Wiser NCW/HNW module.
  59. **licenses** Print out license information. See also: set\_license
  60. **load** Load a previously saved test database.
  61. **login** Login as the client who's name you enter.
  62. **create\_client** Create a new client.
  63. **log\_level** Query or modify the logging level.
  64. **moId** Get the message of the day (alerts, etc)
  65. **nc\_show\_endpoints** Non-Cached Show one or all endpoints.
  66. **nc\_show\_pesq** Non-Cached Show PESQ results for one or all VOIP endpoints.
  67. **nc\_show\_ports** Show one/all ports for one/all resources in one/all shelves. No caching.
  68. **c\_show\_ports** Show one/all ports for one/all resources in one/all shelves. Always uses cache.
  69. **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)
  70. **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)
  71. **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)
  72. **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 whit

- 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)
73. `nc_show_cd` Show one/all Collision Domains.
  74. `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'.
  75. `probe_port` Probe & report low-level details for a port.
  76. `probe_ports` Check for the existence of new (virtual) interfaces.
  77. `port_reset_completed` Internal command used by port-reset script to notify LANforge the reset has completed. This is only valid for Resource processes.
  78. `exit` Log out of the LANforge control server.
  79. `report` Configure server-side reporting.
  80. `reset_port` Reset an Ethernet port or ports.
  81. `reset_serial_span` Reset a serial span.
  82. `reboot_os` Restart the OS on a remote resource.
  83. `rm_cd` Remove a Collision Domain.
  84. `rm_cd_endp` Remove an Endpoint from a Collision Domain.
  85. `rm_cd_vr` Remove a Virtual Router from a Collision Domain.
  86. `rm_endp` Remove one or all endpoints.
  87. `rm_channel_group` Remove a channel group, or set of groups.
  88. `rm_event` Remove one or more events from the event log.
  89. `rm_vr` Remove one or all Virtual Routers.
  90. `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'.
  91. `rm_span` Remove a Serial Span (T1, etc), or a set of spans.
  92. `rm_ppp_link` Remove a PppLink.
  93. `rm_client` Delete a stored client profile.
  94. `rm_cx` Delete a cross-connect from the system.
  95. `rm_wanpath` Remove one or all wanpaths from an endpoint.
  96. `rm_db` Delete a database.
  97. `rm_sec_ip` Remove secondary IP Address(es).
  98. `rm_vlan` Remove a virtual interface.
  99. `rm_test_mgr` Remove a single test manager.
  100. `save` Save the current configuration to a file, to be loaded later.
  101. `scan_wifi` Scan for WiFi access points.
  102. `set_arm_info` Set Armageddon Endpoint configuration.
  103. `set_cx_report_timer` Set time between reports from Test-Manager(s) to client(s).
  104. `set_endp_proxy` Set the proxy information for L3 endpoints.
  105. `set_endp_report_timer` Set the report timer for an endpoint.
  106. `set_cx_state` Set the state of the Cross-Connect(s).
  107. `set_license` Install license keys on the manager machine.
  108. `set_password` Set the password for the current or another client.
  109. `set_ppp_link_state` Set the state of the PPP Link(s).
  110. `set_script` Add or modify a script for a particular endpoint.
  111. `set_wifi_radio` Modify a WIFI Radio interface.
  112. `set_endp_addr` Set the MAC, IP, and Port addresses for an UN\_MANAGED endpoint.
  113. `set_endp_payload` Payload type and payload for an endpoint.
  114. `set_endp_details` Modify low-level settings such as TCP window sizes.
  115. `set_event_interest` Set event interest.
  116. `set_event_priority` Set event priority.
  117. `set_mc_endp` Set multicast-specific info for multicast endpoints.
  118. `show_events` Show recent events.
  119. `show_event_interest` Display Event settings.
  120. `show_err` Send an error message to everyone else logged in to the server.
  121. `start_endp` Start an endpoint.
  122. `start_ppp_link` Start a PppLink.
  123. `stop_endp` Stop an endpoint.
  124. `quiesce_endp` Quiesce an endpoint.
  125. `stop_ppp_link` Stop a PppLink.
  126. `set_endp_tos` Type of Service metrics for this endpoint's transmitted packets.
  127. `set_endp_quiesce` Set the quiesce timer, in seconds.
  128. `set_endp_pld_bounds` Set the min/max payload size bounds for an endpoint.
  129. `set_endp_tx_bounds` Set the min/max transmit rate bounds for an endpoint.
  130. `set_fe_info` Set read/write size and file information for File Endpoints.
  131. `set_gen_cmd` Set command to be executed for this generic endpoint.
  132. `set_endp_flag` Set a flag to modify some Endpoint option.
  133. `set_flag` Set a flag to modify some client option.
  134. `set_gps_info` Set information that could be obtained from a GPS device.
  135. `set_poll_mode` Set mode to polling or push algorithm.
  136. `set_port` Configure the attributes on an Ethernet port.
  137. `set_port_alias` Set the alias for a virtual interface specified by MAC or 802.1Q VLAN-ID.
  138. `set_sec_ip` Set new list of secondary IP Address(es).
  139. `set_voip_info` Set various VOIP endpoint related values.
  140. `set_wanpath_filter` Set the Filter type for the WanPath
  141. `set_wanpath_running` Set the Running state of the WanPath
  142. `set_wanpath_corruption` Set corruption values on a WanLink.
  143. `set_wanlink_info` Set various WAN-Link Endpoint data members.
  144. `set_wanlink_pcap` Set the WanLink packet capture information.
  145. `set_wl_corruption` Set corruption values on a WanLink.
  146. `set_wl_qdisc` Set the Queuing Discipline for a WanLink.
  147. `set_endp_file` Set the file name for a particular endpoint. Used for packet playback.
  148. `show_resources` Show one or all resources for one or all shelves.
  149. `show_clients` Show all unique clients that have registered in the past.
  150. `show_cx` Show one or all cross-connects for one or all test managers.
  151. `show_cxe` Show one or all cross-connects and their endpoints for one or all test managers.
  152. `show_cd` Show one/all Collision Domains.
  153. `show_rt` Show Virtual Router's routing table.
  154. `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.
  155. `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 with the 'show\_vr' command with the rest of the router information. Cached values may be used if they are recent enough.
  156. `show_dbs` Show all available databases that may be loaded.
  157. `show_endpoints` Show one or all endpoints.
  158. `show_pesq` Show PESQ results for one or all VOIP endpoints.
  159. `show_endp_payload` Show the payloads for one or all endpoints.
  160. `show_files` Show files in a particular directory.
  161. `show_ports` Show one/all ports for one/all resources in one/all shelves.
  162. `show_channel_groups` Show one/all ChannelGroups for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.
  163. `show_spans` Show one/all Spans for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.
  164. `show_ppp_links` Show one/all PPP Links for one/all resources in one/all shelves. An empty specifier will be treated as 'all'.
  165. `show_tm` Show one or all test managers.

- 166. **show\_wps** Show one or all WanPaths for one or all WanLink Endpoints.
- 167. **shutdown** Restart the LANforge manager process.
- 168. **shutdown\_resource** Restart all LANforge processes on a remote resource.
- 169. **shutdown\_os** Shutdown the OS on a remote resource.
- 170. **sniff\_port** Launch Wireshark or Ethereal on a traffic generator port.
- 171. **tm\_register** Register interest in one or all test managers.
- 172. **tm\_unregister** Un-register interest in one or all test managers.
- 173. **version** Print out the version of the LANforge server.
- 174. **wiser\_reset** Reset WISER library on the specified machine.
- 175. **who** Show who is currently logged into the system.
- 176. **wifi\_event** This is used internally by LANforge to listen for WiFi events.
- 177. **xorpsh** Connect to a Virtual Router's xorpsh shell or send cmds to the xorpsh.

### 1. add\_arm\_endp

Add an Armageddon endpoint. Armageddon endpoints are kernel accelerated, and 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).

Argument	Description
<b>alias</b>	Name of endpoint.
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>port</b>	Port number.
<b>type</b>	Endpoint Type : arm_udp
<b>pps</b>	Packets per second to generate.
<b>pkt_sz</b>	Minimum packet size, including all Ethernet headers.
<b>mx_pkt_sz</b>	Maximum packet size, including all Ethernet headers.
<b>cpu_id</b>	Preferred CPU ID on which this endpoint should run.
<b>tos</b>	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`

### 2. add\_cx

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

Argument	Description
<b>alias</b>	Name of the Cross Connect to create.
<b>test_mgr</b>	Name of test-manager to create the CX on.
<b>tx_endp</b>	Name of Transmitting endpoint.
<b>rx_endp</b>	Name of Receiving endpoint.

Syntax: `add_cx alias test_mgr tx_endp rx_endp`

### 3. add\_cd

Add an 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 = 1, (0x1) Set to running state.
ERR      = 2, (0x2) Set to kernel mode.
```

Argument	Description
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>alias</b>	Name of Collision Domain.
<b>type</b>	CD Type: WIFI, WISER_SURFACE, WISER_SURFACE_AIR, WISER_AIR_AIR, WISER_NCW
<b>bps</b>	Maximum speed at which this collision domain can run.
<b>report_timer</b>	How often to report stats.
<b>state</b>	RUNNING or STOPPED (default is RUNNING). Use this to start/stop.
<b>flags</b>	See above. Leave blank or use 'NA' for no default values.

Syntax: `add_cd shelf resource alias type bps report_timer state flags`

### 4. 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
<b>cd</b>	Name of Collision Domain.
<b>endp</b>	Endpoint name/id.

Syntax: `add_cd_endp cd endp`

### 5. 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
<b>cd</b>	Name of Collision Domain.
<b>vr</b>	Virtual-Router name/ID.

Syntax: `add_cd_vr cd vr`

## 6. 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. 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 it's 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 sequence. 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.

```
fio_flags:
CHECK_MOUNT   = 1,   (0x1)   Attempt to verify NFS and SMB mounts match the configured values.
AUTO_MOUNT    = 2,   (0x2)   Attempt to mount with the provided information if not already mounted.
AUTO_UNMOUNT  = 4,   (0x4)   Attempt to un-mount when stopping test.
O_DIRECT      = 8,   (0x8)   Open file with O_DIRECT flag, disables caching. Must use block-size read/write calls.
UNLINK_BW    = 16,  (0x10)  Unlink file before writing. This works around issues with CIFS for some file-servers.
O_LARGEFILE   = 32,  (0x20)  Open files with O_LARGEFILE. This allows greater than 2GB files on 32-bit systems.
```

Argument	Description
<b>alias</b>	Name of endpoint.
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>port</b>	Port number.
<b>type</b>	Endpoint Type : fe_generic, fe_nfs, fe_nfs4, fe_cifs, fe_iscsi, fe_cifs/ip6, fe_nfs/ip6, fe_nfs4/ip6, fe_smb2, fe_smb2/ip6
<b>min_read_rate</b>	Minimum read rate, bits-per-second.
<b>max_read_rate</b>	Maximum read rate, bits-per-second.
<b>min_write_rate</b>	Minimum write rate, bits-per-second.
<b>max_write_rate</b>	Maximum write rate, bits-per-second.
<b>payload_pattern</b>	Payload pattern, see above.
<b>directory</b>	The directory to read/write in. Absolute path suggested.
<b>prefix</b>	The prefix of the file(s) to read/write.
<b>server_mount</b>	The server to mount, ex: 192.168.100.5/exports/test1
<b>mount_options</b>	Optional mount options, passed to the mount command. 'NONE' clears.
<b>fio_flags</b>	File-IO flags, see above for details.
<b>mount_dir</b>	Directory to mount/unmount (if blank, will use 'directory').
<b>volume</b>	iSCSI volume to mount
<b>retry_timer</b>	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`

## 7. 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`

Argument	Description
<b>alias</b>	Name of endpoint.
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>port</b>	Port number.
<b>type</b>	Endpoint Type : gen_generic

Syntax: `add_gen_endp alias shelf resource port type`

## 8. add\_l4\_endp

Add a Layer-4 (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. When entering a URL, use this syntax: `[dl | up] URL [file-to-upload-from-or-download-to]`, for example: `'dl http://www.candelatech.com/index.html`

/tmp/index.html' 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 according to our special syntax. If you do not wish to change certain fields from the current value, use 'NA' for the value of these fields. The 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:

```

BASIC:          1
DIGEST:         2
GSSNEGOTIATE:  4
NTLM:           8

USE_PROXY_CACHE: 32
USE_GZIP_COMPRESSION 64
USE_DEFLATE_COMPRESSION 128
INCLUDE_HEADERS 256 /* especially for IMAP */
BIND_DNS        512 /* Make DNS requests go out endpoint's Port. */

```

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
resource	Resource number.
port	Port number.
type	Endpoint Type : I4_generic (URL can be: http, ftp, telnet, or dict)
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.
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: ...
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.
block_size	TFTP Block size, in bytes.
smtp_from	SMTP From address.
ip_addr	Local IP address, for binding to specific secondary IP.

Syntax: add I4\_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

## 9. add\_channel\_group

Add a grouping of DSO 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'

ChannelTypes (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).
fxscls   : 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 idle
clear    : Channel(s) are bundled into a single span. No conversion or
           signalling is performed, and raw data is available on the master.
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
           device.
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.
methdlc  : 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 is rx tone freq in hz, rxbw is rx notch (and decode)
          bandwidth 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

```

dacsrb : 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.
shelf	Shelf name/id.
resource	Resource number.
span_num	The span number. First span is 1, second is 2...
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`

#### 10. 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.
resource	Resource (machine) number.
unit	Unit number for the PPP link. ie, the 7 in ppp7.
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 downtime (ms) for PPP link between 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`

#### 11. 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: 0 == 1-133 feet, 1 == 122-266, 2 == 266-399 3 == 399-533, 4 == 533-655, 5 == -7.5db (CSU) 6 == -15db (CSU), 7 == -22.5db (CSU), 8 == 0db (CSU) Framing NOTE: d4 is also known as 'sf' or 'superframe'.

Argument	Description
shelf	Shelf name/id.
resource	Resource number.
type	Currently supported types are: Sangoma_T1, Sangoma_E1, Digium_T1
span_num	The span number. First span is 1, second is 2...
first_channel	The first DS0 channel for this span.

<b>timing</b>	Timing: 0 == don't use, 1 == primary, 2 == secondary..
<b>buildout</b>	Buildout, Integer, see above.
<b>framing</b>	Framing: T1: esf or d4. E1: cas or ccs.
<b>coding</b>	Coding: T1: ami or b8zs. E1: ami or hdb3
<b>pci_bus</b>	PCI Bus number, needed for Sangoma resources.
<b>pci_slot</b>	PCI slot number, needed for Sangoma resources.
<b>CPU_ID</b>	CPU identifier (A, B, etc) for multiport Sangoma resources.
<b>MTU</b>	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`

## 12. **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
<b>alias</b>	Name of endpoint.
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>port</b>	Port number or name.
<b>phone_num</b>	Endpoint's phone number.
<b>rtp_port</b>	RTP port to use for send and receive.
<b>sip_gateway</b>	SIP Gateway/Proxy Name, this is who we'll register with, or AUTO
<b>tx_sound_file</b>	File name containing the sound sample we will be playing.
<b>rx_sound_file</b>	File name to save received PCM data to. Will be in WAV format.
<b>VAD_timer</b>	How much silence (milliseconds) before VAD is enabled.
<b>VAD_max_timer</b>	How often should we force a packet, even if VAD is on.
<b>gateway_port</b>	IP Port for SIP gateway (defaults to 5060).
<b>display_name</b>	User-Name to be displayed. Use AUTO to display phone number.
<b>proxy_passwd</b>	Password to be used when registering with proxy/gateway.
<b>peer_phone_num</b>	Use AUTO to use phone number of peer endpoint, otherwise specify a number: user[@host[:port]]
<b>auth_user_name</b>	Use this field for authentication user name. AUTO or blank mean use phone number.
<b>ip_addr</b>	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`

## 13. **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) protocol
USE_XORP_MCAST    0x2  # Enable Xorp Multicast routing (requires OSPF to be enabled currently)
USE_XORP_SHA      0x4  # Enable Telcordia's Xorp SHA option (requires OSPF to be enabled)
USE_IPV6_RADVD    0x8  # Enable IPv6 RADV Daemon for interfaces in this virtual router.
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 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 file.
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
<b>alias</b>	Name of virtual router.
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>notes</b>	Notes for this Virtual Router. Put in quotes if the notes include white-space.
<b>X</b>	X coordinate to be used when drawn in the LANforge-GUI.
<b>Y</b>	Y coordinate to be used when drawn in the LANforge-GUI.
<b>width</b>	Width to be used when drawn in the LANforge-GUI.
<b>height</b>	Height to be used when drawn in the LANforge-GUI.
<b>flags</b>	Virtual router flags, see above for definitions.
<b>vr_id</b>	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`

#### 14. 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 file.
    
```

Argument	Description
vr_id	Name of virtual router.
shelf	Shelf name/id.
resource	Resource number.
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

#### 15. 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 enabled.
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.
shelf	Shelf name/id.
resource	Resource number.
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

#### 16. 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 an 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.

```

Flags: Specify subnet 0          = 1      (0x1)
        Specify subnet 1        = 2      (0x2)
        Specify subnet 2        = 4      (0x4)
        Specify subnet 3        = 8      (0x8)
        Specify subnet 4        = 16     (0x10)
        Specify subnet 5        = 32     (0x20)
        Specify subnet 6        = 64     (0x40)
        Specify subnet 7        = 128    (0x80)
        This connection will NAT outgoing packets = 256 (0x100)
        Serve DHCP on this interface = 512 (0x200)
        Use custom DHCP config file = 1024 (0x400)
        Use this interface for multicast cand-rp = 2048 (0x800)
        Use this interface for VRRP = 4096 (0x1000)
    
```

Argument	Description
shelf	Shelf name/id.
resource	Resource number.
vr-name	Virtual Router this endpoint belongs to. Use 'FREE_LIST' to add a stand-alone endpoint.

<b>local_dev</b>	Name of port A for the local redirect device pair.
<b>local_dev_b</b>	Name of port B for the local redirect device pair.
<b>remote_dev</b>	Name of port B for the remote redirect device pair.
<b>remote_dev_b</b>	Name of port B for the remote redirect device pair.
<b>wanlink</b>	The name of the WanLink that connects the two B ports.
<b>X</b>	X coordinate to be used when drawn in the LANforge-GUI.
<b>Y</b>	Y coordinate to be used when drawn in the LANforge-GUI.
<b>width</b>	Width to be used when drawn in the LANforge-GUI.
<b>height</b>	Height to be used when drawn in the LANforge-GUI.
<b>flags</b>	Flags, specify if subnets 0-7 are in use, see above for others.
<b>subnets</b>	Subnets associated with this subnet, format: 1.1.1.1/24,1.1.2.1/16...
<b>nexthop</b>	The next-hop to use when routing packets out this interface.
<b>dhcp_lease_time</b>	DHCP Lease time (in seconds)
<b>dhcp_dns</b>	IP Address of DNS server.
<b>dhcp_min</b>	Minimum IP address range to serve.
<b>dhcp_max</b>	Minimum IP address range to serve.
<b>dhcp_domain</b>	DHCP Domain name to serve.
<b>interface_cost</b>	If using OSPF, this sets the cost for this link (1-65535).
<b>ospf_area</b>	If using OSPF, this sets the OSPF area for this interface. Default is 0.0.0.0.
<b>rip_metric</b>	If using RIP, this determines the RIP metric (cost), (1-15, 15 is infinite).
<b>vrrp_ip</b>	VRRP IPv4 address..ignored if not flagged for VRRP.
<b>vrrp_ip_prefix</b>	Number of bits in subnet mask, ie 24 for 255.255.255.0
<b>vrrp_id</b>	VRRP id, must be unique in this virtual router (1-255)
<b>vrrp_priority</b>	VRRP Priority (1-255, higher is more priority.)
<b>vrrp_interval</b>	VRRP broadcast message interval, in seconds (1-255)

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`

#### 17. set\_vrcx\_cost

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

Argument	Description
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>vr-name</b>	Virtual Router this endpoint belongs to. Use 'FREE_LIST' to add a stand-alone endpoint.
<b>local_dev</b>	Name of port A for the local redirect device pair.
<b>local_dev_b</b>	Name of port B for the local redirect device pair.
<b>remote_dev</b>	Name of port B for the remote redirect device pair.
<b>remote_dev_b</b>	Name of port B for the remote redirect device pair.
<b>wanlink</b>	The name of the WanLink that connects the two B ports.
<b>interface_cost</b>	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`

#### 18. 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. 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 it's 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 sequence. 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.

Argument	Description
----------	-------------

<b>alias</b>	Name of endpoint.
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>port</b>	Port/Interface name or number.
<b>type</b>	Endpoint Type : lf, lf_udp, lf_tcp, custom_ether, custom_udp, custom_tcp, mc_udp, custom_mc_udp
<b>ip_port</b>	IP Port: Ip port for layer three endpoints. Use -1 to let the server automatically configure the ip_port. Layer 2 endpoints will ignore this argument. Use 0 for 'ANY', and let the OS choose.
<b>is_rate_bursty</b>	Yes means it's bursty, anything else means NO.
<b>min_rate</b>	Minimum transmit rate (bps), or only rate if not bursty.
<b>max_rate</b>	Maximum transmit rate (bps), used if in bursty mode.
<b>is_pkt_sz_random</b>	Yes means use random sized packets, anything else means NO.
<b>min_pkt</b>	Minimum packet size, including all headers.
<b>max_pkt</b>	Maximum packet size, including all headers.
<b>payload_pattern</b>	Payload pattern, see above.
<b>use_checksum</b>	Yes means checksum the payload, anything else means NO.
<b>ttl</b>	Time-to-live, used by UDP Multicast Endpoints only.
<b>send_bad_crc_per_million</b>	If NIC supports it, will randomly send X per million packets with bad ethernet Frame Check Sum.
<b>multi_conn</b>	If > 0, will create separate process with this many connections per endpoint.

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`

#### 19. **add\_event**

Argument	Description
<b>event_id</b>	Numeric ID for the event to modify, or 'new' if creating a new one.
<b>details</b>	Event text description. Cannot include double-quote characters.
<b>priority</b>	See <code>set_event_priority</code> for available priorities.
<b>name</b>	Event entity name.

Syntax: `add_event event_id details priority name`

#### 20. **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:

`0x1`                    **Enable Spanning Tree Protocol (STP)**

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Name of the bridge device.
<b>network_devs</b>	Comma-separated list of network devices: eth1,eth2,eth3...
<b>br_flags</b>	Bridge flags, see above.
<b>br_priority</b>	Bridge priority, 16-bit number.
<b>br_aging_time</b>	MAC aging time, in seconds, 32-bit number.
<b>br_max_age</b>	How long until STP considers a non-responsive bridge dead.
<b>br_hello_time</b>	How often does the bridge send out STP hello packets.
<b>br_forwarding_delay</b>	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`

#### 21. **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 light-weight virtual interface that is made unique by it's 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 it's 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.

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Port number of an existing Ethernet interface.

<b>mac</b>	The MAC address for this MAC VLAN interface.
<b>index</b>	Optional: The 'index' of the VLAN, (the 4 in eth0#4).
<b>old_name</b>	The temporary name, used for configuring un-discovered hardware.
<b>report_timer</b>	Report timer for this port, leave blank or use NA for defaults.

Syntax: `add_mvlan shelf resource port mac index old_name report_timer`

## 22. 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
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Name of the Redirect Device to create.
<b>peer_ifname</b>	The peer (other) RedirectDevice in this pair.
<b>report_timer</b>	Report timer for this port, leave blank or use NA for defaults.

Syntax: `add_rdd shelf resource port peer_ifname report_timer`

## 23. add\_gre

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

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Name of the GRE to create, suggested to start with 'gre'
<b>local_lower_ip</b>	The local lower-level IP to use.
<b>remote_lower_ip</b>	The remote lower-level IP to use.
<b>report_timer</b>	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`

## 24. 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
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Name of network device (Port) to which these IPs will be added.
<b>ip_list</b>	IP1/prefix,IP2/prefix,...IPZ/prefix.

Syntax: `add_sec_ip shelf resource port ip_list`

## 25. 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 it's IP and other information.

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Port number of an existing Ethernet interface.
<b>vid</b>	The VLAN-ID for this 802.1Q VLAN interface.
<b>old_name</b>	The temporary name, used for configuring un-discovered hardware.
<b>report_timer</b>	Report timer for this port, leave blank or use NA for defaults.

Syntax: `add_vlan shelf resource port vid old_name report_timer`

## 26. add\_sta

Add a WIFI Virtual Station (Virtual STA) interface. This command requires that the designated machine support LANforge's 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 it's IP and other information. 'NA' can be used for any values that you do not wish to modify. Flags are currently defined as:

0x10	Enable WPA
0x20	Use Custom wpa_supplicant config file.
0x80	Use wpa_supplicant, even for non WPA connections.
0x100	Use wpa_supplicant configured for WEP encryption.
0x200	Use wpa_supplicant configured for WPA2 encryption.
0x400	Disable HT-40 even if hardware and AP support it.

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: /n rates: MCS0-76. Can also enter 0xff 00 ... to directly specify the MCS bitmap. /b: 5.5 Mbps, 11 Mbps /a/g: 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 Mbps Groups: 802.11b, 802.11/a/g, 802.11/a/b/g, 1 stream /n, 2 streams /n, 3 streams /n, 4 streams /n

Argument	Description
shelf	Shelf number.
resource	Resource number.
radio	Name of the physical radio interface, for example: wiphy0
sta_name	Name for this Virtual STA, for example: sta0
flags	Flags for this interface (see above.)
ssid	ESSID for this Virtual STA.
nickname	Nickname for this Virtual STA. (No longer used)
key	Encryption key for this Virtual STA.
AP	The Access point this Virtual STA should be associated with (example: 00:11:22:33:44:55).
wpa_cfg_file	WPA Supplicant config file.
MAC	The MAC address (for release 5.1.0 and later releases using 2.6.29+ kernels)
mode	WiFi mode: 0: AUTO, 1: 802.11a, 2: b, 3: g, 4: abg, 5: abgn, 6: bgn
rate	Max rate, see help above.
MAX_AMSDU	1 == enabled, 0 == disabled, 0xFF == don't 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.

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

## 27. add\_vap

Add a WiFi Virtual Access Point (VAP) interface. This command requires that the designated machine support LANforge's 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. Flags are currently defined as:

```

0x10      Enable WPA
0x20      Use Custom hostapd config file.
0x100     Enable WEP Encryption
0x200     Enable WPA2 Encryption
0x400     Disable HT-40 (will use HT-20 if available).
```

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.

Argument	Description
shelf	Shelf number.
resource	Resource number.
radio	Name of the physical radio interface, for example: wiphy0
ap_name	Name for this Virtual AP, for example: vap0
flags	Flags for this interface (see above.)
ssid	ESSID for this Virtual AP.
key	Encryption key for this Virtual AP.
MAC	The MAC address (for release 5.1.0 and later releases using 2.6.29+ kernels)
beacon	The beacon interval, in 1kus (1.024 ms), default 100, range: 15..65535
frag_thresh	Fragmentation threshold, range: 256..2346. 2346 means disabled
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: 0: AUTO, 1: 802.11a, 2: b, 3: g, 4: abg, 5: abgn, 6: bgn

Syntax: add\_vap shelf resource radio ap\_name flags ssid key MAC beacon frag\_thresh custom\_cfg max\_sta dtim\_period mode

## 28. add\_tm

Create and add a new test manager to the system. A test manager is a group of cross-connects that compose a test group. The idea is that you may wish to segregate one physical LANforge shelf into several test groups to either test different configurations or different sets of hardware. The LANforge system will allow the user to run several test sets simultaneously, but it is up to the user to make sure that that actually makes sense. A test manager may span several shelves, and should be considered global to the LANforge system. See Also: tm\_register

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

Syntax: add\_tm name

## 29. 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 B endpoint.

```
wle_flags:
0x01      SHOW_WP /* Show WanPaths in wanlink endpoint table in GUI */
```

Argument	Description
<b>alias</b>	Name of endpoint.
<b>shelf</b>	Shelf name/id.
<b>resource</b>	Resource number.
<b>port</b>	Port number.
<b>latency</b>	The latency (ms) that will be added to each packet entering this WanLink.
<b>max_rate</b>	Maximum transmit rate (bps) for this WanLink.
<b>description</b>	Description for this endpoint, put in single quotes if it contains spaces.
<b>cpu_id</b>	The CPU/thread that this process should run on (kernel-mode only).
<b>wle_flags</b>	WanLink Endpoint specific flags, see above.

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

### 30. **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
<b>wanlink</b>	Name of WanLink to which we are adding this WanPath.
<b>alias</b>	Name of WanPath.
<b>speed</b>	The maximum speed this WanLink will accept (bps).
<b>latency</b>	The base latency added to all packets, in milliseconds.
<b>max_jitter</b>	The maximum jitter, in milliseconds.
<b>extra_buffer</b>	The extra amount of bytes to buffer before dropping pkts, in units of 1024, use -1 for AUTO.
<b>reorder_freq</b>	How often, out of 1,000,000 packets, should we make a packet out of order.
<b>drop_freq</b>	How often, out of 1,000,000 packets, should we purposefully drop a packet.
<b>dup_freq</b>	How often, out of 1,000,000 packets, should we purposefully duplicate a packet.
<b>source_ip</b>	Selection filter: Source IP.
<b>source_ip_mask</b>	Selection filter: Source IP MASK.
<b>dest_ip</b>	Selection filter: Destination IP.
<b>dest_ip_mask</b>	Selection filter: Destination IP MASK.
<b>playback_capture</b>	ON or OFF, should we play back a WAN capture file?
<b>playback_capture_file</b>	Name of the WAN capture file to play back.
<b>playback_loop</b>	Should we loop the playback file, YES or NO or NA.
<b>ignore_bandwidth</b>	Should we ignore the bandwidth settings from the playback file? YES, NO, or NA.
<b>ignore_loss</b>	Should we ignore the packet-loss settings from the playback file? YES, NO, or NA.
<b>ignore_latency</b>	Should we ignore the latency settings from the playback file? YES, NO, or NA.
<b>ignore_dup</b>	Should we ignore the Duplicate Packet settings from the playback file? YES, NO, or NA.
<b>jitter_freq</b>	How often, out of 1,000,000 packets, should we apply random jitter.
<b>min_drop_amt</b>	Minimum amount of packets to drop in a row. Default is 1.
<b>max_drop_amt</b>	Maximum amount of packets to drop in a row. Default is 1.
<b>min_reorder_amt</b>	Minimum amount of packets by which to reorder, Default is 1.
<b>max_reorder_amt</b>	Maximum amount of packets by which to reorder, Default is 10.
<b>drop_every_xth_pkt</b>	YES to periodically drop every Xth pkt, NO to drop packets randomly.
<b>dup_every_xth_pkt</b>	YES to periodically duplicate every Xth pkt, NO to duplicate packets randomly.
<b>reorder_every_xth_pkt</b>	YES to periodically reorder every Xth pkt, NO to reorder packets randomly.
<b>test_mgr</b>	The name of the Test-Manager this WanPath is to use. Leave blank for no restrictions.
<b>max_lateness</b>	Maximum amount of un-intentional delay before pkt is dropped. Default is AUTO

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`

### 31. **admin**

Various back-door commands. Current supported commands are: `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] #` Helper process only. `write_xorp_cfg` only works on 'resource' processes.

Argument	Description
----------	-------------

<b>cmd</b>	Admin command: resync_clock write_xorp_cfg scan_complete
<b>arg1</b>	Argument 1: xorp-port, scan-rsits-file
<b>arg2</b>	Argument 2: scan key

Syntax: admin cmd arg1 arg2

### 32. **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 Card's status for percentage complete. Also, while this process is running, you will not be able to configure ports or virtual-router configuration.

Argument	Description
<b>shelf</b>	The number of the shelf in question, or 'ALL'.
<b>resource</b>	The number of the resource in question, or 'ALL'.

Syntax: apply\_vr\_cfg shelf resource

### 33. **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
<b>shelf</b>	The number of the shelf in question, or 'ALL'.
<b>resource</b>	The number of the resource in question, or 'ALL'.

Syntax: cancel\_vr\_cfg shelf resource

### 34. **clear\_cx\_counters**

Clear counters for one or all cross-connects.

Argument	Description
<b>cx_name</b>	Name of Cross Connect, or 'all'. Null argument is same as 'all'.

Syntax: clear\_cx\_counters cx\_name

### 35. **clear\_endp\_counters**

Clear counters for one or all endpoints.

Argument	Description
<b>endp_name</b>	Name of Endpoint, or 'all'. Null argument is same as 'all'.
<b>just_latency</b>	Enter 'YES' if you only want to clear latency counters.

Syntax: clear\_endp\_counters endp\_name just\_latency

### 36. **clear\_cd\_counters**

Clear counters for one or all Collision Domains.

Argument	Description
<b>cd_name</b>	Name of Collision Domain, or 'all'. Null argument is same as 'all'.

Syntax: clear\_cd\_counters cd\_name

### 37. **clear\_port\_counters**

Clear counters on one or all ports on one or all resources.

Argument	Description
<b>shelf</b>	The number of the shelf in question, or 'ALL'.
<b>resource</b>	The number of the resource in question, or 'ALL'.
<b>port</b>	The number of the port in question, or 'ALL'.

Syntax: clear\_port\_counters shelf resource port

### 38. **clear\_resource\_counters**

Clear counters on one or all resources.

Argument	Description
<b>shelf</b>	The number of the shelf in question, or 'ALL'.
<b>resource</b>	The number of the resource in question, or 'ALL'.

Syntax: clear\_resource\_counters shelf resource

### 39. **clear\_wp\_counters**

Clear WanPath counters for one endpoint.

Argument	Description
----------	-------------

<b>endp_name</b>	Name of WanLink Endpoint.
<b>wp_name</b>	Name of WanPath to clear.

Syntax: `clear_wp_counters endp_name wp_name`

#### 40. **discover**

Force discovery of nodes on the management network. Note that discovery runs automatically about every minute.

Syntax: `discover`

#### 41. **diag**

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

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

Syntax: `diag type arg1`

#### 42. **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
<b>cmd</b>	set/down/timeout/info: What does DHCP want us to do?
<b>port</b>	Interface name.
<b>reason</b>	DHCP reason, informational mostly.
<b>new_ip</b>	New IP address.
<b>netmask</b>	New subnet mask.
<b>new_mtu</b>	New MTU.
<b>new_router</b>	One or more default routers. LANforge will only use the first one.
<b>new_dns</b>	New DNS server(s) for use by this interface.

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

#### 43. **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
<b>endp_name</b>	Name of Endpoint.
<b>result_file_name</b>	The name of the file received by the endpoint.

Syntax: `do_pesq endp_name result_file_name`

#### 44. **gossip**

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

Argument	Description
<b>message</b>	Message to show to others currently logged on.

Syntax: `gossip message`

#### 45. **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
<b>CX</b>	Cross-connect name
<b>AorB</b>	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `getintxrate CX AorB`

#### 46. **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
<b>CX</b>	Cross-connect name
<b>AorB</b>	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `getinrxrate CX AorB`

#### 47. **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 name
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `getinrxbps CX AorB`

#### 48. **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 name
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `gettxpkts CX AorB`

#### 49. **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 name
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `getrxpkts CX AorB`

#### 50. **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: PkdDrops=INTEGER

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

Syntax: `getpktdrops CX AorB`

#### 51. **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 name
AorB	For AtoB, enter 'B', for BtoA, enter 'A'.

Syntax: `getavglatency CX AorB`

#### 52. **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
AorB	For AtoB, enter 'B', for BtoA, enter 'A'.

Syntax: `getrxporterrpkts CX AorB`

#### 53. **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 name
AorB	For AtoB, enter 'B', for BtoA, enter 'A'.

Syntax: `getrxendperrpkts CX AorB`

#### 54. **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
AorB	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `getipadd CX AorB`

#### 55. **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
<b>CX</b>	Cross-connect name
<b>AorB</b>	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `getmask CX AorB`

#### 56. **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
<b>CX</b>	Cross-connect name
<b>AorB</b>	For endpoint a, enter 'A', for endpoint b, enter 'B'.

Syntax: `getmac CX AorB`

#### 57. **?**

Show help for command(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
<b>command</b>	The command to get help for. Can be 'all', or blank.

Syntax: `? command`

#### 58. **init\_wiser**

Initialize the Wiser NCW/HNW module. This requires that one have the proper library installed. Contact [sales@candelatech.com](mailto: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
<b>shelf</b>	The number of the shelf in question.
<b>resource</b>	The number of the resource in question.
<b>file_name</b>	The WISER file name for the desired emulation, or 'NA' for empty string.
<b>node_count</b>	The number of WISER nodes for the desired emulation, or 'NA' for empty string.

Syntax: `init_wiser shelf resource file_name node_count`

#### 59. **licenses**

Print out license information. See also: `set_license`

Argument	Description
<b>popup</b>	If 'popup', then cause a GUI popup msg, otherwise, just show text.
<b>show_file</b>	If 'yes', then show the license file, not the parsed license information.

Syntax: `licenses popup show_file`

#### 60. **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
<b>name</b>	The name of the database to load. (DFLT is the default)
<b>action</b>	Should be 'append' or 'overwrite'.

Syntax: `load name action`

#### 61. **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
<b>name</b>	A single name with no white-spaces (15 characters or less)
<b>password</b>	Can be blank or 'NA' if no password is set, otherwise must be the password.

Syntax: `login name password`

#### 62. **create\_client**

Create a new client (user).

Argument	Description
<b>name</b>	A single name with no white-spaces (15 characters or less)

<b>password</b>	Can be blank or 'NA' if no password is set, otherwise must be the password. Use IGNORE for no change.
<b>super_user</b>	1 If you want this user to have Administrative powers, 0 or blank otherwise.

Syntax: `create_client name password super_user`

### 63. log\_level

Sets the logging level for the primary log stream. The values are as follows, 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      = 1,    //disasters           (0x1)
ERR      = 2,    //errors             (0x2)
WRN      = 4,    //warnings           (0x4)
INF      = 8,    //info              (0x8)
TRC      = 16,   //function trace    (0x10)
DBG      = 32,   //debug             (0x20)
SEC      = 64,   //log security violations (0x40)
DB       = 128,  //Database related logging (0x80)
XMT      = 256,  //Output going to clients (0x100)
SCRIPT   = 1024, //Scripting specific stuff (0x400)
PARSE    = 2048, //PARSE specific    (0x800)
DBG2     = 4096, //very verbose logging (0x10000)
LIO      = 8192, //IO logging        (0x20000)
OUT1     = 16384, //Some std-out logging (0x40000)
LL_PROF  = 32768, //Profiling information (0x80000)
CUST1    = 65536, //Cust-1, latency info (0x100000)
ALL      = 0xFFFFF, //Log everything    (0xFFFFFFF)

```

Argument	Description
<b>level</b>	Integer corresponding to the logging flags.
<b>target</b>	Options: 'gnu'   [file-endp-name].

Syntax: `log_level level target`

### 64. motd

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

Syntax: `motd`

### 65. nc\_show\_endpoints

Show one or all endpoints. Will NOT use cached values.

Argument	Description
<b>endpoint</b>	Name of endpoint, or 'all'.

Syntax: `nc_show_endpoints endpoint`

### 66. nc\_show\_pesq

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

Argument	Description
<b>endpoint</b>	Name of endpoint, or 'all'.

Syntax: `nc_show_pesq endpoint`

### 67. 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 too slow to yield the results needed.

```

Probe-Flags:  WIFI      1
               MII      2
               ETHTOOL  4
               BRIDGE   8
               EASY_IP_INFO 16 # Everything but gateway, which is expensive to probe.
               GW       32
               GW_FORCE_REFRESH 64 # Force GW (re)probe. Otherwise, cached values *might* be used.

```

Argument	Description
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.
<b>port</b>	Port number, or 'all'.
<b>probe_flags</b>	See above, add them together for multiple probings. Leave blank if you want stats only.

Syntax: `nc_show_ports shelf resource port probe_flags`

### 68. 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:  WIFI      1
               MII      2
               ETHTOOL  4
               BRIDGE   8
               EASY_IP_INFO 16 # Everything but gateway, which is expensive to probe.

```

Argument	Description
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.
<b>port</b>	Port number, or 'all'.
<b>probe_flags</b>	See above, add them together for multiple probings. Leave blank if you want stats only.

Syntax: `c_show_ports shelf resource port probe_flags`

#### 69. **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
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.
<b>channel_name</b>	Name of the channel, or 'all'.

Syntax: `nc_show_channel_groups shelf resource channel_name`

#### 70. **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
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.
<b>span_number</b>	Span-Number of the span, or 'all'.

Syntax: `nc_show_spans shelf resource span_number`

#### 71. **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
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.
<b>router</b>	Name of the Virtual Router, or 'all'.

Syntax: `nc_show_vr shelf resource router`

#### 72. **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 with 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
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.
<b>cx_name</b>	Name of the Virtual Router Connection, or 'all'.

Syntax: `nc_show_vrcx shelf resource cx_name`

#### 73. **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
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.
<b>collision-domain</b>	Name of the Collision Domain, or 'all'.

Syntax: `nc_show_cd shelf resource collision-domain`

#### 74. **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
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.

<b>link_num</b>	Ppp-Link number of the span, or 'all'.
-----------------	--

Syntax: `nc_show_ppp_links shelf resource link_num`

### 75. **probe\_port**

This calls various command-line tools to probe the port and returns the results as a text message.

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Port number or name
<b>key</b>	Unique identifier for this request. Usually left blank.

Syntax: `probe_port shelf resource port key`

### 76. **probe\_ports**

Check for the existence of new (virtual) interfaces.

Argument	Description
<b>shelf</b>	Name/id of the shelf, or 'all'.
<b>resource</b>	Resource number, or 'all'.

Syntax: `probe_ports shelf resource`

### 77. **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
<b>port</b>	The port in question.
<b>type</b>	SUNOS, NORMAL, or SECIP..let us know what kind of reset completed.
<b>extra</b>	IP for SECIP, blank for others.

Syntax: `port_reset_completed port type extra`

### 78. **exit**

Log out of the LANforge control server.

Syntax: `exit`

### 79. **report**

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

Argument	Description
<b>rpt_dir</b>	Directory in which reports should be saved.
<b>reporting_on</b>	Should we globally enable/disable reporting. (YES, NO or NA)
<b>save_endps</b>	Should we save endpoint reports or not. (YES, NO or NA)
<b>save_resource</b>	Should we save Resource reports or not. (YES, NO or NA)
<b>save_ports</b>	Should we save Port reports or not. (YES, NO or NA)

Syntax: `report rpt_dir reporting_on save_endps save_resource save_ports`

### 80. **reset\_port**

This command will cause the driver on the data-production ports to reset the Ethernet hardware. 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 Ethernet port locks up or if you wish to change any of the routing information. See the user-guide section on setting up IP addresses and routing for more information. Don't override the default of 'YES' for `reset_ospf` unless you are certain that is the right thing to do.

Argument	Description
<b>shelf</b>	Shelf number, or ALL.
<b>resource</b>	Resource number, or ALL.
<b>port</b>	Port number to reset, or ALL.
<b>reset_ospf</b>	If set to 'NO', then OSPF will not be updated. Otherwise, it will be updated.

Syntax: `reset_port shelf resource port reset_ospf`

### 81. **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
<b>shelf</b>	Shelf number
<b>resource</b>	Resource (machine) number.
<b>span</b>	Serial-Span number to reset.

Syntax: `reset_serial_span shelf resource span`

## 82. **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
<code>shelf</code>	Shelf number, or ALL.
<code>resource</code>	Resource number, or ALL.

Syntax: `reboot_os shelf resource`

## 83. **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
<code>cd</code>	Name of Collision Domain.

Syntax: `rm_cd cd`

## 84. **rm\_cd\_endp**

Remove an Endpoint from a Collision Domain.

Argument	Description
<code>cd</code>	Name of Collision Domain.
<code>endp</code>	Endpoint name/id.

Syntax: `rm_cd_endp cd endp`

## 85. **rm\_cd\_vr**

Remove a Virtual Router from a Collision Domain.

Argument	Description
<code>cd</code>	Name of Collision Domain.
<code>endp</code>	Virtual-Router name/id.

Syntax: `rm_cd_vr cd endp`

## 86. **rm\_endp**

Remove an endpoint. 'YES\_ALL' for endp-name will delete all endpoints.

Argument	Description
<code>endp_name</code>	Name of the endpoint, or 'YES_ALL'.

Syntax: `rm_endp endp_name`

## 87. **rm\_channel\_group**

Remove a channel group, or set of groups.

Argument	Description
<code>shelf</code>	Name/id of the shelf, or 'all'.
<code>resource</code>	Resource number, or 'all'.
<code>channel_name</code>	Name of the channel, or 'all'.

Syntax: `rm_channel_group shelf resource channel_name`

## 88. **rm\_event**

Argument	Description
<code>event_id</code>	Numeric event-id, or 'all'

Syntax: `rm_event event_id`

## 89. **rm\_vr**

Remove one or all Virtual Routers.

Argument	Description
<code>shelf</code>	Name/id of the shelf, or 'all'.
<code>resource</code>	Resource number, or 'all'.
<code>router_name</code>	Virtual Router name, or 'all'.

Syntax: `rm_vr shelf resource router_name`

## 90. **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'.
resource	Resource number, or 'all'.
connection_name	Virtual Router Connection name, or 'all'.
vrctx_only	If we should NOT delete underlying auto-created objects, enter 'vrctx_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_vrctx shelf resource connection_name vrctx_only vr_id`

#### 91. **rm\_span**

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

Argument	Description
shelf	Name/id of the shelf, or 'all'.
resource	Resource number, or 'all'.
span_num	Span-Number of the channel, or 'all'.

Syntax: `rm_span shelf resource span_num`

#### 92. **rm\_ppp\_link**

Remove a PppLink.

Argument	Description
shelf	Name/id of the shelf.
resource	Resource number that holds this PppLink.
unit_num	Unit-Number for the PppLink to be deleted.

Syntax: `rm_ppp_link shelf resource unit_num`

#### 93. **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.
client_password	Client's password. Not required if we are super-user.

Syntax: `rm_client client_name client_password`

#### 94. **rm\_cx**

Delete a cross-connect from the system.

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

Syntax: `rm_cx test_mgr cx_name`

#### 95. **rm\_wanpath**

Remove one or all wanpaths from an endpoint.

Argument	Description
endp_name	Name of the endpoint.
wp_name	Name of the wanpath.

Syntax: `rm_wanpath endp_name wp_name`

#### 96. **rm\_db**

Delete a database.

Argument	Description
db_name	Name of the database to delete.

Syntax: `rm_db db_name`

#### 97. **rm\_sec\_ip**

Remove secondary IP Address(es).

Argument	Description
shelf	Shelf number.

<b>resource</b>	Resource number.
<b>port</b>	Name of network device (Port) from which these IPs will be removed.
<b>ip_list</b>	IP1/prefix,IP2/prefix,...IPZ/prefix, or ALL

Syntax: `rm_sec_ip shelf resource port ip_list`

#### 98. **rm\_vlan**

Remove an 802.1Q VLAN or MAC-VLAN.

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Port number or name of the virtual interface.

Syntax: `rm_vlan shelf resource port`

#### 99. **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
<b>test_mgr</b>	Name of the test manager to be removed.

Syntax: `rm_test_mgr test_mgr`

#### 100. **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 don't specify a name, it will be saved as the default database (DFLT), and will be automatically loaded at startup.

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

Syntax: `save db_name`

#### 101. **scan\_wifi**

Scan for WiFi access points. Only works for WiFi Virtual Station Interfaces (Virtual STA).

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Port number or name of the virtual interface.
<b>key</b>	Unique identifier for this request. Usually left blank.

Syntax: `scan_wifi shelf resource port key`

#### 102. **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:

```

1024 Use Relative Timestamps. This will increase performance
but can only work if the 'TSC' clock is stable and both
endpoints are on the same machine. It is difficult for
the code to know if the TSC is stable or not, so we cannot
verify this for you at this time.
4096 Use default gateway's MAC for destination MAC. Dest-MAC must
also be set to 'DEFAULT' for this option to take effect.
8192 Use slow-start logic. This ramps up the speed a bit slower when
starting the endpoint and after a clear of its stats. With this
disabled (the default value), the endpoint may over-shoot the
desired bandwidth for a fraction of a second causing un-expected
stress on the network under test.
```

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

<b>src_mac_count</b>	How many source MACs to iterate through.
<b>dst_mac_count</b>	How many destination MACs to iterate through.
<b>src_mac</b>	The source MAC address.
<b>dst_mac</b>	The destination MAC address.
<b>multi_pkts</b>	The number of identical packets to send before creating a new one.
<b>pkts_to_send</b>	The number of packets to send. Set to zero for infinite.
<b>arm_flags</b>	Armageddon-related flags, see above for details.

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`

### 103. **set\_cx\_report\_timer**

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

Argument	Description
<b>test_mgr</b>	Name of the test manager, or 'all'.
<b>cx_name</b>	Name of cross-connect, or 'all'.
<b>milliseconds</b>	Report timer length in milliseconds.
<b>CXONLY</b>	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`

### 104. **set\_endp\_proxy**

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

Argument	Description
<b>endp_name</b>	Name of endpoint.
<b>enabled</b>	YES or NO to enable or disable proxying.
<b>proxy_ip</b>	Proxy IP Address.
<b>proxy_ip_port</b>	Proxy IP Port.

Syntax: `set_endp_proxy endp_name enabled proxy_ip proxy_ip_port`

### 105. **set\_endp\_report\_timer**

The timer should be  $\geq 500$ ms. 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
<b>endp_name</b>	Name of endpoint.
<b>milliseconds</b>	Report timer length in milliseconds.

Syntax: `set_endp_report_timer endp_name milliseconds`

### 106. **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 tests. 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.

Argument	Description
<b>test_mgr</b>	Name of the test-manager, or 'all'.
<b>cx_name</b>	Name of the cross-connect, or 'all'.
<b>cx_state</b>	One of: RUNNING, SWITCH, QUIESCE, STOPPED, or DELETED.

Syntax: `set_cx_state test_mgr cx_name cx_state`

### 107. **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
<b>licenses</b>	License keys all appended into a single line.

Syntax: `set_license licenses`

### 108. **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
<b>old_password</b>	Old password, or 'NA' for blank password.
<b>new_password</b>	New password, or 'NA' for blank password.
<b>client</b>	Specify the client. If left blank, will use current client.

Syntax: `set_password old_password new_password client`

### 109. **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
<b>shelf</b>	Name of the Shelf, or 'all'.
<b>resource</b>	Number of the Resource, or 'all'.
<b>link</b>	Unit Number of the PPP Link, or 'all'.
<b>ppp_state</b>	One of: RUNNING, STOPPED, or DELETED.

Syntax: `set_ppp_link_state shelf resource link ppp_state`

### 110. **set\_script**

Add or modify a script for a particular endpoint. Script types supported are currently:

```
NONE          # Delete any existing script.
Script2544    # For RFC 2544 type testing.
ScriptWL      # For iterating through WanLink settings
```

Flags are defined as:

```
SCR_STOPPED      = 1 # Script should NOT have any affect on the endpoint.
SCR_NO_KEYED_RPT = 2 # Script should NOT send reports to the CLI/GUI.
SCR_SYMMETRIC    = 4 # This script should apply settings to the peer endpoing as well.
SCR_HIDE_ITER_DETAILS = 8 # Hide iteration detail reports.
SCR_HIDE_LEGEND  = 16 # Don't print the legend in the report.
SCR_HIDE_CSV     = 32 # Don't print the CSV data in the report.
SCR_RUN_ON_MGR   = 64 # Set automatically by LANforge.
SCR_COMPLETED    = 128 # Set automatically by LANforge.
SCR_LOOP         = 256 # Loop script until manually stopped.
SCR_SHOW_DUPS    = 512 # Report duplicate packets.
SCR_SHOW_OOO     = 1024 # Report out-of-order packets.
```

Script2544 has this syntax for it's private data: `run_duration pause_duration rates_string payload_sizes_string` Rates and payload sizes are comma-separated-strings, ie: 60,128,256,1472 The interval durations are in milliseconds. ScriptWL has this syntax for it's private data: `run_duration rates latencies jitter drops Rates, latencies, jitter and drops are comma-separated-strings, ie: 60,128,256,1472` The interval duration is in milliseconds. Use 'NA' for no changes to existing config, and use 'NONE' if you want the value to be blank.

Argument	Description
<b>endp</b>	Endpoint name or ID.
<b>name</b>	Script name.
<b>flags</b>	See above for description of the defined flags.
<b>type</b>	One of: NONE, Script2544, ScriptWL
<b>private</b>	Private encoding for the particular script.

Syntax: `set_script endp name flags type private`

### 111. **set\_wifi\_radio**

Modify a WIFI Radio Interface (such as phy0 or wiphy0). This command requires that the designated machine support LANforge's wifi driver for the Atheros brand WIFI NICs. The radio interface holds common configuration for the Virtual STA interfaces. 'NA' can be used for any values that you do not wish to modify. Most of these values are passed directly to the `iw`, `iwconfig` and/or `iwpriv` tool. 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.

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>radio</b>	Name of the physical radio interface, for example: wiphy0
<b>mode</b>	WiFi mode: 0: AUTO, 1: 802.11a, 2: b, 3: g, 4: abg, 5: abgn, 6: bgn
<b>channel</b>	Channel number for this radio device.
<b>country</b>	Country number for this radio device.
<b>frequency</b>	Frequency for this radio.
<b>sens</b>	The sensitivity of this radio.
<b>rate</b>	No longer used, specify the rate on the virtual station(s) instead.
<b>rts</b>	The RTS for this radio.
<b>txpower</b>	The transmit power setting for this radio.
<b>mac</b>	Used to identify when name cannot be trusted (2.6.34+ kernels).
<b>antenna</b>	Antenna configuration: 0 Diversity, 1 Fixed-A, 2 Fixed-B

Syntax: `set_wifi_radio shelf resource radio mode channel country frequency sens rate rts txpower mac antenna`

### 112. **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 it's addresses before you can start it. The syntax for MAC addresses is: 01:BB:CC:DD:EE:FF, IP addresses should be entered in dot notation, ie: 172.4.1.1, and port is the IP port (1-65534).

Argument	Description
<b>name</b>	The name of the endpoint we are configuring.

<b>mac</b>	The MAC address. Only needed for LANforge protocol Endpoints.
<b>ip</b>	The IP Address. Used for TCP/IP and UDP/IP protocols.
<b>min_port</b>	The Minimum IP Port. Used for TCP/IP and UDP/IP protocols.
<b>max_port</b>	The Maximum IP Port. Used for TCP/IP and UDP/IP protocols.

Syntax: `set_endp_addr name mac ip min_port max_port`

### 113. **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:

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 it's 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 sequence. 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.

Argument	Description
<b>name</b>	The name of the endpoint we are configuring.
<b>payload_type</b>	The payload type. See help for <code>add_endp</code> .
<b>payload</b>	For custom payloads, enter the payload in hex, up to 2048 bytes.

Syntax: `set_endp_payload name payload_type payload`

### 114. **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.

Argument	Description
<b>name</b>	The name of the endpoint we are configuring.
<b>rcvbuf_size</b>	The receive buffer (window) size.
<b>sndbuf_size</b>	The sending buffer (window) size.
<b>min_conn_timer</b>	The minimum duration (in ms) this connection should run before re-establishing.
<b>pkts_to_send</b>	Number of packets to send before stopping. 0 means infinite.
<b>dst_mac</b>	Destination MAC address, used for custom Ethernet replays.
<b>max_conn_timer</b>	The maximum duration (in ms) this connection should run before re-establishing.
<b>min_reconn_pause</b>	The minimum time between re-connects, in ms.
<b>max_reconn_pause</b>	The maximum time between re-connects, in ms.
<b>max_ip_port</b>	The maximum IP Port value. If greater than min, each connection will use a random value between min and max.
<b>conn_timeout</b>	For TCP, the max time in milliseconds to wait for connection to establish.
<b>tcp_mss</b>	TCP Maximum Segment Size, affects packet size on the wire (88 - 32767).

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`

### 115. **set\_event\_interest**

Set event interest. If flags and val1 are left blank, then the current settings will be displayed. `ei_flags`: 0x0001 SET If 0, then will clear interest instead. `events1` values: 0x0001 LINK\_DOWN Notify when Interface Link goes DOWN. 0x0002 LINK\_UP Notify when Interface Link goes UP. 0x0004 CUSTOM Custom event (generated by USER in GUI or CLI). `events2-4` are currently un-used. `Var1`: Currently un-defined.

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

Syntax: `set_event_interest ei_flags events1 events2 events3 events4 var1 event_cnt`

## 116. set\_event\_priority

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

1	Link-Down	Notify when Interface Link goes UP.
2	Link-Up	Notify when Interface Link goes DOWN.
3	Custom	Custom event (generated by USER in GUI or CLI).
4	Resource-Down	Resource has crashed, rebooted, etc.
5	Resource-Up	Resource has connected to manager.
6	Endp-Stopped	Endpoint stopped for some reason.
7	Endp-Started	Endpoint was started.
8	Disconnect	WiFi interface disconnected from AP.
9	Connect	WiFi interface connected to AP.
10	Logout	CLI/GUI user disconnected from LANforge.
11	Login	CLI/GUI user connected to LANforge.
12	Stop-Reports	Stop saving report data files (CSV).
13	Start-Reports	Start saving report data files (CSV).
14	Cleared	Counters were cleared for some entity.

Priorities:

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

Argument	Description
event	Number or name for the event, see above.
priority	Number or name for the priority.

Syntax: set\_event\_priority event priority

## 117. set\_mc\_endp

Argument	Description
name	The name of the endpoint we are configuring.
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

## 118. 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.
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

## 119. show\_event\_interest

Display Event settings.

Syntax: show\_event\_interest

## 120. 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.

Syntax: show\_err message

## 121. 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

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

Syntax: start\_endp endp\_name

## 122. start\_ppp\_link

Start a PppLink.

Argument	Description
<b>shelf</b>	Name/id of the shelf.
<b>resource</b>	Resource number that holds this PppLink.
<b>unit_num</b>	Unit-Number for the PppLink to be started.

Syntax: `start_ppp_link shelf resource unit_num`

### 123. 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
<b>endp_name</b>	Name of the endpoint, or 'all'.

Syntax: `stop_endp endp_name`

### 124. 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
<b>endp_name</b>	Name of the endpoint, or 'all'.

Syntax: `quiesce_endp endp_name`

### 125. stop\_ppp\_link

Stop a PppLink.

Argument	Description
<b>shelf</b>	Name/id of the shelf.
<b>resource</b>	Resource number that holds this PppLink.
<b>unit_num</b>	Unit-Number for the PppLink to be stopped.

Syntax: `stop_ppp_link shelf resource unit_num`

### 126. 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
<b>name</b>	The name of the endpoint we are configuring.
<b>TOS</b>	The Type of Service, can be HEX, see above.
<b>priority</b>	The socket priority, can be any positive number.

Syntax: `set_endp_tos name TOS priority`

### 127. 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
<b>name</b>	The name of the endpoint we are configuring.
<b>quiesce</b>	The number of seconds to quiesce this endpoint when told to quiesce.

Syntax: `set_endp_quiesce name quiesce`

### 128. 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
<b>name</b>	The name of the endpoint we are configuring.
<b>min_pld_size</b>	The minimum payload size, in bytes.
<b>max_pld_size</b>	The maximum payload size, in bytes.
<b>is_random</b>	YES if random, anything else for NO.
<b>use_checksum</b>	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`

### 129. 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
<b>name</b>	The name of the endpoint we are configuring.
<b>min_tx_rate</b>	The minimum transmit rate, in bits per second (bps).
<b>max_tx_rate</b>	The maximum transmit rate, in bits per second (bps).
<b>is_bursty</b>	YES if bursty, anything else for NO.

Syntax: `set_endp_tx_bounds name min_tx_rate max_tx_rate is_bursty`

### 130. **set\_fe\_info**

Set read/write size and file information for File Endpoints. You can also enter 'NA' for any value you do not wish to change.

Argument	Description
<b>name</b>	The name of the file endpoint we are configuring.
<b>min_rw_sz</b>	Minimum read/write size, in bytes.
<b>max_rw_sz</b>	Maximum read/write size, in bytes.
<b>num_files</b>	Number of files to create when writing.
<b>min_file_size</b>	The minimum file size, in bytes.
<b>max_file_size</b>	The maximum file size, in bytes.
<b>directory</b>	The directory to read/write in. Absolute path suggested.
<b>prefix</b>	The prefix of the file(s) to read/write.
<b>io_direction</b>	Should we be reading or writing: options: read, write

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

### 131. **set\_gen\_cmd**

Set command that will be executed when this generic endpoint is started. Example: `set_gen_cmd bonnie++ -f -d /mnt/test_fs/ -q`

Argument	Description
<b>name</b>	The name of the file endpoint we are configuring.

Syntax: `set_gen_cmd name`

### 132. **set\_endp\_flag**

This command allows you to modify certain Endpoint specific options, including Unmanaged. To get a full listing of options, use the command without specifying a flag.

Argument	Description
<b>name</b>	The name of the endpoint we are configuring.
<b>flag</b>	The name of the flag.
<b>val</b>	Either 1 (for on), or 0 (for off).

Syntax: `set_endp_flag name flag val`

### 133. **set\_flag**

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

```

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.

```

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

Argument	Description
<b>flag</b>	The name of the flag.
<b>val</b>	Either 1 (for on), or 0 (for off).
<b>client</b>	Specify the user, if it is not the current user. Requires admin privileges.

Syntax: `set_flag flag val client`

### 134. **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
<b>shelf</b>	Shelf number for the port to be modified, or SELF.
<b>resource</b>	Resource number for the port to be modified.
<b>latitude</b>	The latitude, as read from a GPS device.
<b>ns</b>	North or South (Latitude).
<b>longitude</b>	The longitude, as ready from a GPS device.

<b>ew</b>	East or west (Longitude).
<b>altitude</b>	Altitude, assumes units are Meters.

Syntax: `set_gps_info shelf resource latitude ns longitude ew altitude`

### 135. **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.

Argument	Description
<b>mode</b>	'polling' or 'push'.

Syntax: `set_poll_mode mode`

### 136. **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 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:

```

0x2      Fixed-10bt-HD,
0x4      Fixed-10bt-FD,
0x8      Fixed-100bt-HD,
0x10     Fixed-100bt-FD,
0x100    auto-negotiate,
0x100000 advert-10bt-HD,
0x200000 advert-10bt-FD,
0x400000 advert-100bt-HD,
0x800000 advert-100bt-FD,
0x8000000 advert-flow-control,
0x10000000 PROMISC,
0x80000000 USE-DHCP
0x400000000 advert-10G-HD,
0x800000000 advert-10G-FD

```

`cmd_flags` can be:

```

0x1 reset_transceiver,
0x2 restart-link-negotiation,
0x4 force MII probe
0x8 Don't probe hardware
0x10 probe WIFI
0x20 Force new GW probe
0x40 Force enw GW probe for ONLY this interface
0x80 from_user (Required to change Mgt Port config (IP, DHCP, etc)

```

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
current_flags: 0x2
IP address:    0x4
IP Mask:      0x8
IP Gateway:   0x10
MAC Address:  0x20
Supported flags: 0x40
LINK Speed:   0x80
MTU:          0x100
TX Queue Length: 0x200
PROMISC mode: 0x400
(INTERNAL USE): 0x800
Alias:        0x1000
Rx-ALL       0x2000
DHCP         0x4000      #including client-id.
RPT-Timer    0x8000
BRIDGE       0x10000
IPV6_ADDRS   0x20000
BYPASS       0x40000
GEN_OFFLOAD  0x80000      # Generic offload flags, everything but LRO
CPU_MASK     0x100000
LRO_OFFLOAD  0x200000      # LRO (Must be disabled when used in Wanlink, and probably in routers)
STA_BR_ID    0x400000

```

`flags2` flag2 values are:

```

USE_STP           0x1
SUPPORTS_BYPASS  0x2
BYPASS_ENABLED   0x10
BYPASS_POWER_DOWN 0x80   Should bypass be on when we shutdown or loose power?
BYPASS_POWER_ON  0x100   Should bypass be on when we first power up?
BYPASS_DISCONNECT 0x200   Logically disconnect the cable (link-down)

```

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

Argument	Description
<b>shelf</b>	Shelf number for the port to be modified.
<b>resource</b>	Resource number for the port to be modified.
<b>port</b>	Port number for the port to be modified.
<b>ip_addr</b>	IP address for the port, or NA.
<b>netmask</b>	Netmask which this port should use, or NA.
<b>gateway</b>	IP address of the gateway device - used for IP routing, or NA.
<b>cmd_flags</b>	Command Flags: 0x11 reset_transceiver, 0x2 re-negotiate link, or NA.
<b>current_flags</b>	See above, or NA.
<b>MAC</b>	MAC address to set this port to, or leave blank to not set it, or NA.
<b>MTU</b>	Maximum Transmit Unit (MTU) for this interface. Can be blank or NA.
<b>tx_queue_len</b>	Transmit Queue Length for this interface. Can be blank or NA.
<b>alias</b>	A user-defined name for this interface. Can be blank or NA.
<b>interest</b>	Which things are we really interested in setting. Can over-ride defaults based on the other arguments.
<b>report_timer</b>	How often, in milliseconds, should we poll stats on this interface?
<b>flags2</b>	Bridge & other flags, see above.
<b>br_priority</b>	Bridge priority, 16-bit number.
<b>br_aging_time</b>	MAC aging time, in seconds, 32-bit number (or peer IP for GRE).
<b>br_max_age</b>	How long until STP considers a non-responsive bridge dead.
<b>br_hello_time</b>	How often does the bridge send out STP hello packets.
<b>br_forwarding_delay</b>	How long to wait until the bridge will start forwarding packets.
<b>br_port_cost</b>	STP Port cost for a port (this applies only to NON-BRIDGE interfaces).
<b>br_port_priority</b>	STP Port priority for a port (this applies only to NON-BRIDGE interfaces).
<b>IPv6_addr_global</b>	Global scoped IPv6 address.
<b>IPv6_addr_link</b>	Link scoped IPv6 address.
<b>IPv6_dflt_gw</b>	IPv6 default gateway.
<b>bypass_wdt</b>	Watch Dog Timer (in seconds) for this port. Zero (0) to disable.
<b>cpu_mask</b>	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.
<b>dns_servers</b>	DNS servers for use by traffic on this port, comma-separated list, BLANK means zero-length string.
<b>sta_br_id</b>	WiFi STAtion bridge ID. Zero means none.
<b>dhcp_client_id</b>	Optional string of up to 63 bytes in length to be passed to the dhclient process. NONE means do not use.

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`

### 137. 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

Argument	Description
<b>shelf</b>	Shelf number for the port to be modified.
<b>resource</b>	Resource number for the port to be modified.
<b>port</b>	Physical Port identifier that owns the virtual interface.
<b>vport</b>	Virtual port identifier. MAC for MAC-VLANs, VLAN-ID for 802.1Q vlans.
<b>alias</b>	New alias to assign to this virtual interface.

Syntax: `set_port_alias shelf resource port vport alias`

### 138. set\_sec\_ip

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

Argument	Description
----------	-------------

<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>port</b>	Name of network device (Port) to which these IPs will be added.
<b>ip_list</b>	IP1/prefix,IP2/prefix,...IPZ/prefix.

Syntax: `set_sec_ip shelf resource port ip_list`

### 139. **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
<b>name</b>	The name of the endpoint we are configuring.
<b>first_call_delay</b>	How long to wait before making first call, in seconds.
<b>min_inter_call_gap</b>	Minimum time to wait between calls, in seconds.
<b>max_inter_call_gap</b>	Maximum time to wait between calls, in seconds.
<b>reg_expire_timer</b>	SIP Registration expire timer, in seconds.
<b>codec</b>	Codec to use for the voice stream, supported values: G711U, SPEEX, g726-16, g726-24, g726-32, g726-40, g729a.
<b>messaging_protocol</b>	Messaging protocol, supported values: SIP.
<b>loop_call_count</b>	How many calls to make, zero means infinite.
<b>loop_wavefile_count</b>	How many times to play the wave file, zero means infinite.
<b>min_call_duration</b>	How long should the call be, in seconds.
<b>max_call_duration</b>	How long should the call be, in seconds.
<b>sound_dev</b>	Which sound device should we play sound to. (see <code>set_endp_flags</code> ).
<b>ringing_timer</b>	How long (milliseconds) to wait in the ringing state before flagging call as no-answer.
<b>local_sip_port</b>	Local SIP UDP port. Default is <code>min-rtp-port + 2</code> .
<b>PESQ_server_IP</b>	LANforge PESQ server IP address.
<b>PESQ_server_port</b>	LANforge PESQ server port, default is 3998.
<b>PESQ_server_passwd</b>	LANforge PESQ server password. Default is to use no authentication (blank entry).
<b>jitter_buffer_sz</b>	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`

### 140. **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](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
<b>wl_name</b>	The name of the WanLink endpoint we are configuring.
<b>wp_name</b>	The name of the WanPath we are configuring.
<b>filter</b>	The filter type, one of: MAC, IP, PCAP.
<b>src_filter</b>	The source MAC or IP/Mask. For PCAP, this is the only filter.
<b>dst_filter</b>	The destination MAC or IP/Mask, 'NA' for PCAP.
<b>reverse</b>	If you want the logic reversed, use 'ON', otherwise set to 'OFF'
<b>defer_flush</b>	Enter 'YES' if you do NOT want this flushed to the remote.
<b>passive</b>	Enter 'YES' if you do NOT want to use this filter currently.

Syntax: `set_wanpath_filter wl_name wp_name filter src_filter dst_filter reverse defer_flush passive`

### 141. **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. If it is 'STOPPED', then it will not be running at any time. If it is '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
<b>wl_name</b>	The name of the WanLink endpoint we are configuring.
<b>wp_name</b>	The name of the WanPath we are configuring.
<b>running</b>	The state, one of: AS_PARENT, RUNNING, STOPPED.

Syntax: `set_wanpath_running wl_name wp_name running`

### 142. **set\_wanpath\_corruption**

Set a corruption for a WanPath. Corruptions include random and fixed over-write 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. This 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
<b>name</b>	WanLink name
<b>path</b>	WanPath name
<b>index</b>	The corruption to modify (0-5).
<b>flags</b>	The flags for this corruption.
<b>byte</b>	The byte to use for OVERWRITE_FIXED (or NA).
<b>min_offset</b>	The minimum offset from start of Ethernet packet for the byte to be modified.
<b>max_offset</b>	The maximum offset from start of Ethernet packet for the byte to be modified.
<b>rate</b>	Specifies how often, per million, this corruption should be applied.

Syntax: `set_wanpath_corruption name path index flags byte min_offset max_offset rate`

#### 143. **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 don't change the current value.

Argument	Description
<b>name</b>	The name of the endpoint we are configuring.
<b>speed</b>	The maximum speed of traffic this endpoint will accept (bps).
<b>latency</b>	The base latency added to all packets, in milliseconds.
<b>max_jitter</b>	The maximum jitter, in milliseconds.
<b>reorder_freq</b>	How often, out of 1,000,000 packets, should we make a packet out of order.
<b>extra_buffer</b>	The extra amount of bytes to buffer before dropping pkts, in units of 1024. Use -1 for AUTO.
<b>drop_freq</b>	How often, out of 1,000,000 packets, should we purposefully drop a packet.
<b>dup_freq</b>	How often, out of 1,000,000 packets, should we purposefully duplicate a packet.
<b>playback_capture_file</b>	Name of the WAN capture file to play back.
<b>jitter_freq</b>	How often, out of 1,000,000 packets, should we apply jitter.
<b>min_drop_amt</b>	Minimum amount of packets to drop in a row. Default is 1.
<b>max_drop_amt</b>	Maximum amount of packets to drop in a row. Default is 1.
<b>min_reorder_amt</b>	Minimum amount of packets by which to reorder, Default is 1.
<b>max_reorder_amt</b>	Maximum amount of packets by which to reorder, Default is 10.
<b>max_lateness</b>	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`

#### 144. **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.

Argument	Description
<b>name</b>	The name of the endpoint we are configuring.
<b>capture</b>	Should we capture or not? ON or OFF.
<b>directory</b>	The directory name in which packet capture files will be written.

Syntax: `set_wanlink_pcap name capture directory`

#### 145. **set\_wl\_corruption**

Set a corruption for WanLink. Corruptions include random and fixed over-write 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.

```

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

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

Syntax: `set_wl_corruption name index flags byte min_offset max_offset rate`

#### 146. **set\_wl\_qdisc**

Set a Queuing Discipline on the WanLink. FIFO is the default, and Weighted Round Robin (WRR) is also available. Others may be added in the future. FIFO has no arguments, but 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 it's probably a good idea to have 7 queues for WRR QDiscs.

Argument	Description
<b>name</b>	WanLink name
<b>qdisc</b>	FIFO, WRR,a,b,c,d,e,f,g etc

Syntax: `set_wl_qdisc name qdisc`

#### 147. **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.

Argument	Description
<b>name</b>	The name of the endpoint we are configuring.
<b>playback</b>	Should we playback the capture or not? ON or OFF.
<b>file</b>	The file name to read the playback packets from.

Syntax: `set_endp_file name playback file`

#### 148. **show\_resources**

Show one or all resources for one or all shelves.

Argument	Description
<b>shelf</b>	Shelf number or alias, can be 'all'.
<b>resource</b>	Resource number, or 'all'.

Syntax: `show_resources shelf resource`

#### 149. **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`

#### 150. **show\_cx**

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

Argument	Description
<b>test_mgr</b>	Specify test-mgr to act on, or 'all'.
<b>cross_connect</b>	Specify cross-connect to act on, or 'all'.

Syntax: `show_cx test_mgr cross_connect`

#### 151. **show\_cxe**

Show one or all cross-connects and their endpoints for one or all test managers.

Argument	Description
<b>test_mgr</b>	Specify test-mgr to act on, or 'all'.
<b>cross_connect</b>	Specify cross-connect to act on, or 'all'.

Syntax: `show_cxe test_mgr cross_connect`

### 152. 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'.
resource	Resource number, or 'all'.
collision-domain	Name of the Collision Domain, or 'all'.

Syntax: `show_cd shelf resource collision-domain`

### 153. show\_rt

Show a Virtual Router's routing table.

Argument	Description
shelf	Shelf number.
resource	Resource number.
virtual-router	Name of the virtual router.
key	Unique identifier for this request. Usually left blank.

Syntax: `show_rt shelf resource virtual-router key`

### 154. 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'.
resource	Resource number, or 'all'.
router	Name of the Virtual Router, or 'all'.

Syntax: `show_vr shelf resource router`

### 155. 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 with 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'.
resource	Resource number, or 'all'.
cx_name	Name of the Virtual Router Connection, or 'all'.

Syntax: `show_vrcx shelf resource cx_name`

### 156. show\_dbs

Show all available databases that may be loaded.

Syntax: `show_dbs`

### 157. show\_endpoints

Show one or all endpoints.

Argument	Description
endpoint	Name of endpoint, or 'all'.

Syntax: `show_endpoints endpoint`

### 158. show\_pesq

Show PESQ results for one or all VOIP endpoints.

Argument	Description
endpoint	Name of endpoint, or 'all'.

Syntax: `show_pesq endpoint`

### 159. 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.
max_bytes	The max number of payload bytes to print out, default is 128.

Syntax: `show_endp_payload name max_bytes`

### 160. 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 the 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. dir\_flags are defined as follows:  
1 SORT\_BY\_TIME

Argument	Description
shelf	The virtual shelf to search in. Use 0 for manager machine.
resource	The machine to search in.
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

### 161. show\_ports

Show one/all ports for one/all resources in one/all shelves.

```
Probe-Flags: WIFI          1
              MII          2
              ETHTOOL      4
              BRIDGE       8
              EASY_IP_INFO 16 # Everything but gateway, which is expensive to probe.
              GW           32
              GW_FORCE_REFRESH 64 # Force GW (re)probe. Otherwise, cached values *might* be used.
```

Argument	Description
shelf	Name/id of the shelf, or 'all'.
resource	Resource number, or 'all'.
port	Port number, or 'all'.
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

### 162. 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'.
resource	Resource number, or 'all'.
channel_name	Name of the channel, or 'all'.

Syntax: show\_channel\_groups shelf resource channel\_name

### 163. 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'.
resource	Resource number, or 'all'.
span_number	Span-Number of the span, or 'all'.

Syntax: show\_spans shelf resource span\_number

### 164. 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'.
resource	Resource number, or 'all'.
link_num	Ppp-Link number of the span, or 'all'.

Syntax: show\_ppp\_links shelf resource link\_num

### 165. show\_tm

Show one or all test managers.

Argument	Description
test_mgr	Can be name of test manager, or 'all'.

Syntax: show\_tm test\_mgr

### 166. show\_wps

Show one or all WanPaths for one or all WanLink Endpoints.

Argument	Description
endpoint	Name of endpoint, or 'all'.
wanpath	Name of wanpath, or 'all'.

Syntax: show\_wps endpoint wanpath

#### 167. 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

#### 168. 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.
resource	Resource number, or ALL.

Syntax: shutdown\_resource shelf resource

#### 169. 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.
resource	Resource number, or ALL.

Syntax: shutdown\_os shelf resource

#### 170. sniff\_port

This will attempt to launch the Wireshark or Ethereal program on the specified port's machine and display Wireshark/Ethereal 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: <http://www.hummingbird.com/products/nc/exceed/index.html> 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!
You can find more about the Wireshark program here:
http://www.wireshark.org
For questions specific to LANforge, you should contact Candela Technologies.
```

Argument	Description
shelf	Shelf number.
resource	Resource number.
port	The port we are trying to run the packet sniffer on.
display	The DISPLAY option, for example: 192.168.1.5:0.0. Will guess if left blank.

Syntax: sniff\_port shelf resource port display

#### 171. 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.)
client_name	Name of client to be registered. (dfit is current client)

Syntax: tm\_register test\_mgr client\_name

#### 172. 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.)
client_name	Name of client to be un-registered. (dfit is current client)

Syntax: tm\_unregister test\_mgr client\_name

173. **version**

Print out the version of the LANforge server.

Syntax: `version`

174. **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
<b>shelf</b>	Shelf number, or ALL.
<b>resource</b>	Resource number, or ALL.

Syntax: `wiser_reset shelf resource`

175. **who**

Show who is currently logged into the system.

Syntax: `who`

176. **wifi\_event**

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

Argument	Description
<b>device</b>	Interface or PHY in most cases.
<b>event</b>	What happened.
<b>status</b>	Status on what happened.
<b>msg</b>	Entire event in human readable form.

Syntax: `wifi_event device event status msg`

177. **xorpsh**

Connect to a Virtual Router's xorpsh shell. The Display determines where the terminal will appear (you must be running X windows on the target DISPLAY system.) For 'Display' mode, arg is the 'foo' in DISPLAY=foo environment variable for this instance of xorpsh. For 'run\_cmd' mode, it is the command (in quotes) to pass to the xorpsh process.

Argument	Description
<b>shelf</b>	Shelf number.
<b>resource</b>	Resource number.
<b>router</b>	Name of the virtual router.
<b>cmd</b>	Determines action, current commands: <code>display</code> , <code>run_cmd</code>
<b>arg</b>	See above.

Syntax: `xorpsh shelf resource router cmd arg`