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.

1. add_arm_endp Add an Armageddon (Kernel accelerated) endpoint.
2. add_cx Add a cross-connect to a test-manager.
3. add_file_endp Add a File endpoint to the LANforge Manager.
4. add_gen_endp Add a Generic endpoint to the LANforge Manager.
5. add_l4_endp Add a Layer-4 endpoint to the LANforge Manager.
6. add_channel_group Add a grouping of DS0 channels to be used by PPP connections.
7. add_ppp_link Add a PPP interface connection.
8. add_t1_span Add a T1/E1 SPAN to the LANforge Manager.
9. add_voip_endp Add a VOIP endpoint to the LANforge Manager.
10. add_endp Add an endpoint to the LANforge Manager.
11. add_mvlan Add a MAC based VLAN (Requires kernel support).
12. add_rdd Add a Redirect-Device (Requires kernel support).
13. add_vlan Add an 802.1Q VLAN (Requires kernel support).
14. add_tm Create and add a new test manager to the system.
15. add_wl_endp Add a WanLink (ICE) endpoint to the LANforge Manager.
16. add_t1_wl_endp Add a T1 wanlink endpoint.
17. add_wanpath Add a WanPath (ICE) personality to a WanLink.
18. admin Various admin commands.
19. clear_cx_counters Clear counters for one or all cross-connects.
20. clear_endp_counters Clear counters for one or all endpoints.
21. clear_port_counters Clear counters on one or all ports on one or all cards.
22. clear_card_counters Clear counters on one or all cards.
23. discover Force discovery of nodes on the management network.
24. diag Get diagnostic information from the LANforge server.
25. do_pesq Start a PESQ calculation.
26. gossip Send a message to everyone else logged in to the server.
27. getintxrate Get tx packets per second rate over the last 3 seconds.
28. getinrxrate Get rx packets per second rate over the last 3 seconds.
29. gettxpkts Get the total tx packets sent.
30. getrxpkts Get the total rx packets sent.
31. getpktdrops Get the total packets dropped (based on sequence number gaps).
32. getavglatency Get the average latency for an endpoint.
33. getrxporterrpkts Get the total error packets detected on the receiving port (interface)
34. getrxendperrpkts Get the total error packets detected on the endpoint.
35. getipadd Get the IP for an endpoint.
36. getmask Get the IP Mask for an endpoint.
37. getmac Get the MAC address for an endpoint.
38. ? Show help for command(s).
39. licenses Print out license information.
40. load Load a previously saved test database.
41. login Login as the client who's name you enter.
42. log_level Query or modify the logging level.
43. motd Get the message of the day (alerts, etc)
44. nc_show_endpoints Non-Cached Show one or all endpoints.
45. nc_show_pesq Non-Cached Show PESQ results for one or all VOIP endpoints.
46. nc_show_ports Show one/all ports for one/all cards in one/all shelves. No caching.
47. nc_show_channel_groups Show one/all ChannelGroups for one/all cards in one/all shelves. An empty specifier will be treated as 'all'. Will always request the absolute latest information from the remote system(s)
48. nc_show_spans Show one/all Spans for one/all cards in one/all shelves. An empty specifier will be treated as 'all'. Will always request the absolute latest information from the remote system(s)
49. nc_show_ppp_links Show one/all PPP Links for one/all cards in one/all shelves. An empty specifier will be treated as 'all'.
50. probe_ports Check for the existence of new (virtual) interfaces.
51. exit Log out of the LANforge control server.
52. reset_port Reset an ethernet port or ports.
53. reset_serial_span Reset a serial span.
54. reboot_os Restart the OS on a remote card.
55. rm_endp Remove one or all endpoints.
56. rm_channel_group Remove a channel group, or set of groups.
57. rm_span Remove a Serial Span (T1, etc), or a set of spans.
58. rm_ppp_link Remove a PppLink.
59. rm_client Delete a stored client profile.
60. rm_cx Delete a cross-connect from the system.
61. rm_db Delete a database.
62. rm_vlan Remove a virtual interface.
63. rm_test_mgr Remove a single test manager.
64. save Save the current configuration to a file, to be loaded later.
65. set_arm_info Set Armagheddon Endpoint configuration.
66. set_cx_report_timer Set time between reports from Test-Manager(s) to client(s).
67. set_cx_state Set the state of the Cross-Connect(s).
68. set_ppp_link_state Set the state of the PPP Link(s).

69. set_endp_addr Set the MAC, IP, and Port addresses for an UN_MANAGED endpoint.
70. set_endp_payload Payload type and payload for an endpoint.
71. set_endp_details Modify low-level settings such as TCP window sizes.
72. set_mc_endp Set multicast-specific info for multicast endpointts.
73. start_endp Start an endpoint.
74. start_ppp_link Start a PppLink.
75. stop_endp Stop an endpoint.
76. stop_ppp_link Stop a PppLink.
77. set_endp_tos Type of Service metrics for this endpoint's transmitted packets.
78. set_endp_pld_bounds Set the min/max payload size bounds for an endpoint.
79. set_endp_tx_bounds Set the min/max transmit rate bounds for an endpoint.
80. set_fe_info Set read/write size and file information for File Endpoints.
81. set_gen_cmd Set command to be executed for this generic endpoint.
82. set_endp_flag Set a flag to modify some Endpoint option.
83. set_flag Set a flag to modify some client option.
84. set_gps_info Set information that could be obtained from a GPS device.
85. set_poll_mode Set mode to polling or push algorithm.
86. set_port Configure the attributes on an ethernet port.
87. set_port_alias Set the alias for a virtual interface specified by MAC or 802.1Q VLAN-ID.
88. set_voip_info Set various VOIP endpoint related values.
89. set_wp_filter Set the Filter type for the WanPath
90. set_wp_running Set the Running state of the WanPath
91. set_wanlink_info Set various WAN-Link Endpoint data members.
92. set_wanlink_pcap Set the WanLink packet capture information.
93. set_endp_file Set the file name for a particular endpoint. Used for packet playback.
94. show_cards Show one or all cards for one or all shelves.
95. show_clients Show all unique clients that have registered in the past.
96. show_cx Show one or all cross-connects for one or all test managers.
97. show_cxe Show one or all cross-connects and their endpoints for one or all test managers.
98. show_dbs Show all available databases that may be loaded.
99. show_endpoints Show one or all endpoints.
100. show_pesq Show PESQ results for one or all VOIP endpoints.
101. show_endp_payload Show the payloads for one or all endpoints.
102. show_files Show files in a particular directory.
103. show_ports Show one/all ports for one/all cards in one/all shelves.
104. show_channel_groups Show one/all ChannelGroups for one/all cards in one/all shelves. An empty specifier will be treated as 'all'.
105. show_spans Show one/all Spans for one/all cards in one/all shelves. An empty specifier will be treated as 'all'.
106. show_ppp_links Show one/all PPP Links for one/all cards in one/all shelves. An empty specifier will be treated as 'all'.
107. show_tm Show one or all test managers.
108. shutdown Shutdown the LANforge Manager server (Not the cards)
109. shutdown_card Shutdown a remote card.
110. shutdown_os Shutdown the OS on a remote card.
111. sniff_port Bring up Ethereal on a traffic generator port.
112. tm_register Register interest in one or all test managers.
113. tm_unregister Un-register interest in one or all test managers.
114. version Print out the version of the LANforge server.
115. who Show who is currently logged into the system.

1. ## add_arm_endp

   Add an Armageddon endpoint. Armageddon endpoints are kernel accellerated, and run 10 to 20 times faster than regular LANforge endpoints. The feature set is diffent for these endpoints, however. Unlike many other endpoints, Armageddon endpoints can transmit and receive to/from the same machine.

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
port	Port number.
type	Endpoint Type : arm_udp
pps	Packets per second to generate.
pkt_sz	Packet size, including all ethernet headers.

Syntax: add_arm_endp alias shelf card port type pps pkt_sz

2. ## add_cx

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

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

Syntax: add_cx alias test_mgr tx_endp rx_endp

3. ## 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.

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
port	Port number.
type	Endpoint Type : fe_generic, fe_nfs, fe_iscsi
min_read_rate	Minimum read rate, bits-per-second.
max_read_rate	Maximum read rate, bits-per-second.
min_write_rate	Minimum write rate, bits-per-second.
max_write_rate	Maximum write rate, bits-per-second.
payload_pattern	pattern can be: 'increasing', 'decreasing', 'random', 'random_fixed', 'zeros', 'ones' * 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). * custom : Enter your own payload with the set_endp_payload cmd.
directory	The directory to read/write in. Absolute path suggested.
prefix	The prefix of the file(s) to read/write.

Syntax: add_file_endp alias shelf card port type min_read_rate max_read_rate min_write_rate max_write_rate payload_pattern directory prefix

4. ## 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
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
port	Port number.
type	Endpoint Type : gen_generic, gen_bonnie

Syntax: add_gen_endp alias shelf card port type

5. ## 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 | upl] 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.

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
port	Port number.
type	Endpoint Type : l4_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 mili-seconds
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.

Syntax: add_l4_endp alias shelf card port type proxy_port timeout url_rate URL proxy_server proxy_userpwd ssl_cert_fname

6. ## add_channel_group

Add a grouping of DS0 channels to be used by PPP connections. Supported formats for the channels entry include: '0-23' '0,1,2,3,4,5,7' '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). fxsls : Channel(s) are signalled using FXS Loopstart protocol. fxsgs : Channel(s) are signalled using FXS Groundstart protocol. fxsks : Channel(s) are signalled using FXS Koolstart protocol. fxols : Channel(s) are signalled using FXO Loopstart protocol. fxogs : Channel(s) are signalled using FXO Groundstart protocol. fxoks : Channel(s) are signalled using FXO Koolstart protocol. unused : No signalling is performed, each channel in the list remains 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. nethdlc : The zaptel driver bundles the channels together into an hdlc network device, which in turn can be configured with sethdlc (available separately). These are not currently supported: sf : Channel(s) are signalled using in-band single freq tone. Syntax as follows: channel# => sf:,,,,, rxfreq is rx tone freq in hz, rxbw is rx notch (and decode) bandwith in hz (typically 10.0), rxflag is either 'normal' or 'inverted', txfreq is tx tone freq in hz, txlevel is tx tone level in dbm, txflag is either 'normal' or 'inverted'. Set rxfreq or txfreq to 0.0 if that tone is not desired. dacs : The zaptel driver cross connects the channels starting at the channel number listed at the end, after a colon dacsrbs : The zaptel driver cross connects the channels starting at the channel number listed at the end, after a colon and also performs the DACSing of RBS bits

Argument	Description
alias	Name for this Channel Group.
shelf	Shelf name/id.
card	Card 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 card span_num channels type MTU idle_flag

7. ## 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.
card	Card (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 card 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

8. ## 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 card 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.
card	Card 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.
timing	Timing: 0 == don't use, 1 == primary, 2 == secondary..
buildout	Buildout, Integer, see above.
framing	Framing: T1: esf or d4. E1: cas or ccs.
coding	Coding: T1: ami or b8zs. E1: ami or hdb3
pci_bus	PCI Bus number, needed for Sangoma cards.
pci_slot	PCI slot number, needed for Sangoma cards.
CPU_ID	CPU identifer (A, B, etc) for multiport Sangoma cards.
MTU	MTU for this span (used by in-band management, if at all).

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

9. ## add_voip_endp

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

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
port	Port number or name.
phone_num	Endpoint's phone number.
rtp_port	RTP port to use for send and receive.
sip_gateway	SIP Gateway Address, this is who we'll register with, or AUTO
tx_sound_file	File name containing the sound sample we will be playing.
rx_sound_file	File name to save received PCM data to. Will be in WAV format.
VAD_timer	How much silence (miliseconds) before VAD is enabled.
VAD_max_timer	How often should we force a packet, even if VAD is on.
gateway_port	IP Port for SIP/h323 gateway (defaults to 5060).

Syntax: add_voip_endp alias shelf card port phone_num rtp_port sip_gateway tx_sound_file rx_sound_file VAD_timer VAD_max_timer gateway_port

10. ## 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.

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
port	Port number.

type	Endpoint Type : lf, lf_udp, lf_tcp, custom_ether, custom_udp, custom_tcp, mc_udp, custom_mc_udp
ip_port	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.
is_rate_bursty	Yes means it's bursty, anything else means NO.
min_rate	Minimum transmit rate (bps), or only rate if not bursty.
max_rate	Maximum transmit rate (bps), used if in bursty mode.
is_pkt_sz_random	Yes means use random sized packets, anything else means NO.
min_pkt	Minimum packet size, including all headers.
max_pkt	Maximum packet size, including all headers.
payload_pattern	pattern can be: 'increasing', 'decreasing', 'random', 'random_fixed', 'zeros', 'ones' * 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). * custom : Enter your own payload with the set_endp_payload cmd.
use_checksum	Yes means checksum the payload, anything else means NO.
ttl	Time-to-live, used by UDP Multicast Endpoints only.
send_bad_crc_per_million	If NIC supports it, will randomly send X per million packets with bad ethernet Frame Check Sum.

Syntax: add_endp alias shelf card 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

11. ## 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
shelf	Shelf number.
card	Card number.
port	Port number of an existing Ethernet interface.
mac	The MAC address for this MAC VLAN interface.
index	Optional: The 'index' of the VLAN, (the 4 in eth0#4).
old_name	The temporary name, used for configuring un-discovered hardware.

Syntax: add_mvlan shelf card port mac index old_name

12. ## add_rdd

Add a Redirect-Device. This command requires that the designated machine support the redirdev kernel module. Redirect-Devices 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.

Argument	Description
shelf	Shelf number.
card	Card number.
port	Name of the Redirect Device to create.
peer_ifname	The peer (other) RedirectDevice in this pair.

Syntax: add_rdd shelf card port peer_ifname

13. ## 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
shelf	Shelf number.
card	Card number.

port	Port number of an existing Ethernet interface.
vid	The VLAN-ID for this 802.1Q VLAN interface.
old_name	The temporary name, used for configuring un-discovered hardware.

Syntax: add_vlan shelf card port vid old_name

14. ## 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

15. ## 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.

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
port	Port number.
latency	The latency (ms) that will be added to each packet entering this WanLink.
max_rate	Maximum transmit rate (bps) for this WanLink.

Syntax: add_wl_endp alias shelf card port latency max_rate

16. ## add_t1_wl_endp

Add a T1 wanlink endpoint.

Argument	Description
alias	Name of endpoint.
shelf	Shelf name/id.
card	Card number.
channel_group	Name of channel group
latency	The latency (ms) that will be added to each packet.
bit_flip_rate	How many bits per billion to flip.
transpose_rate	How many bits per billion to tranpose with their neighbour?

Syntax: add_t1_wl_endp alias shelf card channel_group latency bit_flip_rate transpose_rate

17. ## add_wanpath

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

Argument	Description
wanlink	Name of WanLink to which we are adding this WanPath.
alias	Name of WanPath.
speed	The maximum speed this WanLink will accept (bps).
latency	The base latency added to all packets, in mili-seconds.
max_jitter	The maximum jitter, in mili-seconds.
extra_buffer	The extra amount of bytes to buffer before dropping pkts, in units of 1024.
reorder_freq	How often, out of 1,000,000 packets, should we make a packet out of order.
drop_freq	How often, out of 1,000,000 packets, should we purposefully drop a packet.

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

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

18. ## admin

Various admin commands. Current supported commands are: resync_clock # Used on windows to force re-sync with the system clock.

Argument	Description
cmd	Admin command: resync_clock

Syntax: admin cmd

19. ## clear_cx_counters

Clear counters for one or all cross-connects.

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

Syntax: clear_cx_counters cx_name

20. ## clear_endp_counters

Clear counters for one or all endpoints.

Argument	Description
endp_name	Name of Endpoint, or 'all'. Null argument is same as 'all'.

Syntax: clear_endp_counters endp_name

21. ## clear_port_counters

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

Argument	Description
shelf	The number of the shelf in question, or 'ALL'.
card	The number of the card in question, or 'ALL'.
port	The number of the port in question, or 'ALL'.

Syntax: clear_port_counters shelf card port

22. ## clear_card_counters

Clear counters on one or all cards.

Argument	Description
shelf	The number of the shelf in question, or 'ALL'.
card	The number of the card in question, or 'ALL'.

Syntax: clear_card_counters shelf card

23. ## discover

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

Syntax: discover

24. ## diag

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

Argument	Description
type	Default (blank) is everything, options: alerts, license, counters, clients, endpoints, shelf.

Syntax: diag type

25. ## do_pesq

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

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

Syntax: do_pesq endp_name result_file_name

26. ## gossip

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

Argument	Description
message	Message to show to others currently logged on.

Syntax: gossip message

27. ## getintxrate

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

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

Syntax: getintxrate CX AorB

28. ## getinrxrate

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

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

Syntax: getinrxrate CX AorB

29. ## 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

30. ## 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

31. ## 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

32. ## getavglatency

Get the running average latency for packets received by and endpoint. Values will always be fresh (cached values are not used). Value will be an integer. Response: AvgLatency=INTEGER

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

Syntax: getavglatency CX AorB

33. ## 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

34. ## 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

35. ## 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

36. ## getmask

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

Argument	Description
CX	Cross-connect name

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

Syntax: getmask CX AorB

37. ## getmac

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

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

Syntax: getmac CX AorB

38. ## ?

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

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

Syntax: ? command

39. ## licenses

Print out license information.

Syntax: licenses

40. ## load

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

Argument	Description
name	The name of the database to load. (DFLT is the default)
action	Should be 'append' or 'overwrite'.

Syntax: load name action

41. ## 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.

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

Syntax: login name

42. ## 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     (0x1000)
LIO        = 8192   //IO logging               (0x2000)
OUT1       = 16384  //Some std-out logging     (0x4000)
LL_PROF    = 32768  //Profiling information    (0x8000)
CUST1      = 65536  //Cust-1, latency info     (0x10000)
ALL        = 0xFFFFFF //Log everything         (0xFFFFFFFF)
```

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

Syntax: log_level level target

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

Syntax: motd

44. ## nc_show_endpoints
Show one or all endpoints. Will NOT use cached values.

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

Syntax: nc_show_endpoints endpoint

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

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

Syntax: nc_show_pesq endpoint

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

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
port	Port number, or 'all.
mii	MII if you want to probe MII too, blank otherwise.

Syntax: nc_show_ports shelf card port mii

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

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
channel_name	Name of the channel, or 'all'.

Syntax: nc_show_channel_groups shelf card channel_name

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

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
span_number	Span-Number of the span, or 'all.

Syntax: nc_show_spans shelf card span_number

49. ## nc_show_ppp_links
Show one/all PPP Links for one/all cards in one/all shelves. An empty specifier will be treated as 'all'.

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
link_num	Ppp-Link number of the span, or 'all.

Syntax: nc_show_ppp_links shelf card link_num

50. ## probe_ports
Check for the existence of new (virtual) interfaces.

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.

Syntax: probe_ports shelf card

51. ## exit
Log out of the LANforge control server.

Syntax: exit

52. ## 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.

Argument	Description
shelf	Shelf number, or ALL.
card	Card number, or ALL.
port	Port number to reset, or ALL.

Syntax: reset_port shelf card port

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

Argument	Description
shelf	Shelf number
card	Card (machine) number.
span	Serial-Span number to reset.

Syntax: reset_serial_span shelf card span

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

Argument	Description
shelf	Shelf number, or ALL.
card	Card number, or ALL.

Syntax: reboot_os shelf card

55. ## rm_endp
Remove an endpoint. 'YES_ALL' for cx_name will delete all endpoints.

Argument	Description
cx_name	Name of the cross-connect, or 'YES_ALL'.

Syntax: rm_endp cx_name

56. ## rm_channel_group
Remove a channel group, or set of groups.

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
channel_name	Name of the channel, or 'all'.

Syntax: rm_channel_group shelf card channel_name

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

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

Syntax: rm_span shelf card span_num

58. ## rm_ppp_link
Remove a PppLink.

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

Syntax: rm_ppp_link shelf card unit_num

59. ## 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.

Syntax: rm_client client_name

60. ## 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

61. ## rm_db
Delete a database.

Argument	Description
db_name	Name of the database to delete.

Syntax: rm_db db_name

62. ## rm_vlan
Remove an 802.1Q VLAN or MAC-VLAN.

Argument	Description
shelf	Shelf number.
card	Card number.
port	Port number of the virtual interface.

Syntax: rm_vlan shelf card port

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

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

Syntax: rm_test_mgr test_mgr

64. ## 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
db_name	The name the backup shall be saved as (blank means dflt)

Syntax: save db_name

65. ## set_arm_info

Set Armagheddon 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.

Argument	Description
name	Name of the Endpoint we are setting.
min_pkt_size	Minimum packet size, including all Ethernet headers (but not CRC).
max_pkt_size	Maximum packet size, including all Ethernet headers (but not CRC).
udp_src_min	Minimum source UDP port.
udp_src_max	Maximum source UDP port.
udp_dst_min	Minimum destination UDP port.
udp_dst_max	Minimum destination UDP port.
ip_src_min	Minimum source IP address to use.
ip_src_max	Maximum source IP address to use.
ip_dst_min	Minimum destination IP address to use.
ip_dst_max	Maximum destination IP address to use.
src_mac_count	How many source MACs to iterate through.
dst_mac_count	How many destination MACs to iterate through.
src_mac	The source MAC address.
dst_mac	The destination MAC address.
multi_pkts	The number of identical packets to send before creating a new one.
pkts_to_send	The number of packets to send. Set to zero for infinite.

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

66. ## set_cx_report_timer

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

Argument	Description
test_mgr	Name of the test manager, or 'all'.
cx_name	Name of cross-connect, or 'all'.
mili_seconds	Report timer length in mili-seconds.

Syntax: set_cx_report_timer test_mgr cx_name mili_seconds

67. ## 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. 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
test_mgr	Name of the test-manager, or 'all'.
cx_name	Name of the cross-connect, or 'all'.
cx_state	One of: RUNNING, SWITCH, STOPPED, or DELETED.

Syntax: set_cx_state test_mgr cx_name cx_state

68. ## set_ppp_link_state

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

Argument	Description
shelf	Name of the Shelf, or 'all'.

card	Number of the Card, or 'all'.
link	Unit Number of the PPP Link, or 'all'.
ppp_state	One of: RUNNING, STOPPED, or DELETED.

Syntax: set_ppp_link_state shelf card link ppp_state

69. ## 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
name	The name of the endpoint we are configuring.
mac	The MAC address. Only needed for LANforge protocol Endpoints.
ip	The IP Address. Used for TCP/IP and UDP/IP protocols.
port	The IP Port. Used for TCP/IP and UDP/IP protocols.

Syntax: set_endp_addr name mac ip port

70. ## set_endp_payload

Set the payload type, and potentially the payload for a particular Endpoint. To see the payload types, see the help for add_endp. 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.)

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

Syntax: set_endp_payload name payload_type payload

71. ## 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.

Argument	Description
name	The name of the endpoint we are configuring.
rcvbuf_size	The receive buffer (window) size.
sndbuf_size	The sending buffer (window) size.

Syntax: set_endp_details name rcvbuf_size sndbuf_size

72. ## 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
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

73. ## 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

74. ## start_ppp_link

Start a PppLink.

Argument	Description
shelf	Name/id of the shelf.
card	Card number that holds this PppLink.
unit_num	Unit-Number for the PppLink to be started.

Syntax: start_ppp_link shelf card unit_num

75. ## stop_endp

Stop 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: stop_endp endp_name

76. ## stop_ppp_link

Stop a PppLink.

Argument	Description
shelf	Name/id of the shelf.
card	Card number that holds this PppLink.
unit_num	Unit-Number for the PppLink to be stopped.

Syntax: stop_ppp_link shelf card unit_num

77. ## set_endp_tos

Set the IP Type of Service (TOS) byte for this Endpoint. Only valid for TCP/IP and UDP/IP based endpoint types. You should consult RFC-791, RFC-1349 and RFC-2474 for ideas of what this value can and should be. RFC 1394 standard TOS settings can be entered by name: LOWDELAY, THROUGHPUT, RELIABILITY, LOWCOST. You may also instruct the Endpoint to NOT set any TOS with the TOS keyword: DONT-SET. This will make the Endpoint use the kernel defaults. If you have already set the TOS, then you must stop and restart the Endpoint to have the new default values take affect. For Priority, please read the Linux socket man page: man 7 socket

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

Syntax: set_endp_tos name TOS priority

78. ## set_endp_pld_bounds

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

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

Syntax: set_endp_pld_bounds name min_pld_size max_pld_size is_random use_checksum

79. ## set_endp_tx_bounds

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

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

Syntax: set_endp_tx_bounds name min_tx_rate max_tx_rate is_bursty

80. ## 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
name	The name of the file endpoint we are configuring.
min_rw_sz	Minimum read/write size, in bytes.
max_rw_sz	Maximum read/write size, in bytes.
num_files	Number of files to create when writing.
min_file_size	The minimum file size, in bytes.
max_file_size	The maximum file size, in bytes.
directory	The directory to read/write in. Absolute path suggested.
prefix	The prefix of the file(s) to read/write.
io_direction	Should we be reading or writing: options: read, write

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

81. ## 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
name	The name of the file endpoint we are configuring.

Syntax: set_gen_cmd name

82. ## 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
name	The name of the endpoint we are configuring.
flag	The name of the flag.
val	Either 1 (for on), or 0 (for off).

Syntax: set_endp_flag name flag val

83. ## set_flag

This command allows you to modify certain client specific options, including the brevity of the output. To get a full listing of options, use the command without any arguments.

Argument	Description
flag	The name of the flag.
val	Either 1 (for on), or 0 (for off).

Syntax: set_flag flag val

84. ## set_gps_info

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

Argument	Description
shelf	Shelf number for the port to be modified, or SELF.
card	Card number for the port to be modified.
lattitude	The lattitude, as read from a GPS device.
ns	North or South (Latitude).
longitude	The longitude, as ready from a GPS device.
ew	East or west (Longitude).
altitude	Altitude, assumes units are Meters.

Syntax: set_gps_info shelf card lattitude ns longitude ew altitude

85. ## 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
mode	'polling' or 'push'.

Syntax: set_poll_mode mode

86. ## 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 card 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**
cmd_flags can be:
0x1 reset_transceiver, 0x2 restart-link-negotiation
Interest flags are normally not needed by casual users. They are used to ignore certain arguments or flags. The 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

Argument	Description
shelf	Shelf number for the port to be modified.
card	Card number for the port to be modified.
port	Port number for the port to be modified.
ip_addr	IP address for the port, or NA.
netmask	Netmask which this port should use, or NA.
gateway	IP address of the gateway device - used for IP routing, or NA.
cmd_flags	Command Flags: 0x11 reset_transceiver, 0x2 re-negotiate link, or NA.
current_flags	See above, or NA.
MAC	MAC address to set this port to, or leave blank to not set it, or NA.
MTU	Maximum Transmit Unit (MTU) for this interface. Can be blank or NA.
tx_queue_len	Transmit Queue Length for this interface. Can be blank or NA.
alias	A user-defined name for this interface. Can be blank or NA.
interest	Which things are we really interested in setting. Can over-ride defaults based on the other arguments.

Syntax: set_port shelf card port ip_addr netmask gateway cmd_flags current_flags MAC MTU tx_queue_len alias interest

87. ## 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
shelf	Shelf number for the port to be modified.
card	Card number for the port to be modified.
port	Physical Port identifier that owns the virtual interface.
vport	Virtual port identifier. MAC for MAC-VLANs, VLAN-ID for 802.1Q vlans.
alias	New alias to assign to this virtual interface.

Syntax: set_port_alias shelf card port vport alias

88. ## set_voip_info

Set various VOIP endpoint related values. Use this to enable behaviour different from the defaults (see add_voip_endp, and set_endp_flag). If the min and max values are different, a random value in that range will be chosen. Any values can be 'NA' and they will be ignored. If min/max_call_duration is less than the length of the wave file multiplied by the number of times to play the wave file, then the max_call_duration will determine the call length. If Min/Max call duration are not the same, a random value between the min and max will be

chosen each time a call is started. Otherwise, the call will be determined by the wave file size & repetition. The registration expire timer affects the sip messaging protocol: The default of 300 is fine in most cases. The sound_dev determines which sound device to play the received RTP stream on. Usually /dev/dsp or /dev/audio is the correct value.

Argument	Description
name	The name of the endpoint we are configuring.
first_call_delay	How long to wait before making first call, in seconds.
min_inter_call_gap	Minimum time to wait between calls, in seconds.
max_inter_call_gap	Maximum time to wait between calls, in seconds.
reg_expire_timer	SIP Registration expire timer, in seconds.
codec	Codec to use for the voice stream, supported values: G711U, SPEEX, g726-16, g726-24, g726-32, g726-40, g729a.
messaging_protocol	Messaging protocol, supported values: SIP, H323.
loop_call_count	How many calls to make, zero means infinite.
loop_wavefile_count	How many times to play the wave file, zero means infinite.
min_call_duration	How long should the call be, in seconds.
max_call_duration	How long should the call be, in seconds.
sound_dev	Which sound device should we play sound to. (see set_endp_flags).
ringing_timer	How long (miliseconds) to wait in the ringing state before flagging call as no-answer.
local_sip_port	Local SIP UDP port. Default is min-rtp-port + 2.
PESQ_server_IP	LANforge PESQ server IP address.
PESQ_server_port	LANforge PESQ server port, default is 3998.
PESQ_server_passwd	LANforge PESQ server password. Default is to use no authentication (blank entry).

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

89. ## set_wp_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 math on the source and destination IP addresses and masks. Default behaviour is to match on the IP address.

Argument	Description
wl_name	The name of the WanLink endpoint we are configuring.
wp_name	The name of the WanPath we are configuring.
filter	The filter type, one of: MAC, IP.
src_mac	The source MAC, if filtering by MAC.
dst_mac	The destination MAC, if filtering by MAC.

Syntax: set_wp_filter wl_name wp_name filter src_mac dst_mac

90. ## set_wp_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
wl_name	The name of the WanLink endpoint we are configuring.
wp_name	The name of the WanPath we are configuring.
running	The state, one of: AS_PARENT, RUNNING, STOPPED.

Syntax: set_wp_running wl_name wp_name running

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

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

92. ## 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
name	The name of the endpoint we are configuring.
capture	Should we capture or not? ON or OFF.
file	The file name to save the capture to.

Syntax: set_wanlink_pcap name capture file

93. ## 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 incomming 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
name	The name of the endpoint we are configuring.
playback	Should we playback the capture or not? ON or OFF.
file	The file name to read the playback packets from.

Syntax: set_endp_file name playback file

94. ## show_cards

Show one or all cards for one or all shelves.

Argument	Description
shelf	Shelf number or alias, can be 'all'.
card	Card number, or 'all'.

Syntax: show_cards shelf card

95. ## 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

96. ## show_cx

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

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

Syntax: show_cx test_mgr cross_connect

97. ## show_cxe

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

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

Syntax: show_cxe test_mgr cross_connect

98. ## show_dbs

Show all available databases that may be loaded.

Syntax: show_dbs

99. ## show_endpoints

Show one or all endpoints.

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

Syntax: show_endpoints endpoint

100. ## show_pesq

Show PESQ results for one or all VOIP endpoints.

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

Syntax: show_pesq endpoint

101. ## 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

102. ## 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.

Argument	Description
shelf	The virtual shelf to search in.
card	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.

Syntax: show_files shelf card key directory filter

103. ## show_ports

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

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
port	Port number, or 'all.
mii	MII if you want to probe MII too, blank otherwise.

Syntax: show_ports shelf card port mii

104. ## show_channel_groups

Show one/all ChannelGroups for one/all cards in one/all shelves. An empty specifier will be treated as 'all'.

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
channel_name	Name of the channel, or 'all'.

Syntax: show_channel_groups shelf card channel_name

105. ## show_spans

Show one/all Spans for one/all cards in one/all shelves. An empty specifier will be treated as 'all'.

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
span_number	Span-Number of the span, or 'all.

Syntax: show_spans shelf card span_number

106. ## show_ppp_links

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

Argument	Description
shelf	Name/id of the shelf, or 'all'.
card	Card number, or 'all'.
link_num	Ppp-Link number of the span, or 'all.

Syntax: show_ppp_links shelf card link_num

107. ## 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

108. ## shutdown

Shutdown the LANforge Manager server (Not the cards)

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.

Syntax: shutdown really chdir

109. ## shutdown_card

This will stop the LANforge client process on the card specified. This will cause all tests that are utilizing that card to be destroyed. Depending on how the system is set up, the remote card will probably be restarted in about 5 seconds.

Argument	Description
shelf	Shelf number, or ALL.
card	Card number, or ALL.

Syntax: shutdown_card shelf card

110. ## shutdown_os

This will bring down the Operating System on the card 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 cards. 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.
card	Card number, or ALL.

Syntax: shutdown_os shelf card

111. ## sniff_port

This will attempt to launch the Ethereal program on the specified port's machine and display Ethereal to the specified X server. 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 Ethereal program here:
http://www.ethereal.com
For questions specific to LANforge, you should contact Candela Technologies.
```

Argument	Description
shelf	Shelf number.
card	Card 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 card port display

112. ## 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. (dflt is current client)

Syntax: tm_register test_mgr client_name

113. ## 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. (dflt is current client)

Syntax: tm_unregister test_mgr client_name

114. ## version

Print out the version of the LANforge server.

Syntax: version

115. ## who

Show who is currently logged into the system.

Syntax: who
