

LANforge Server Installation for MacOS

Goal: Install the LANforge Server on the MacOS machine, have the LANforge Manager recognize the MacOS machine as a resource, and cluster the LANforge Manager with the MacOS machine.

This cookbook requires LANforge GUI version 5.4.6 and above.

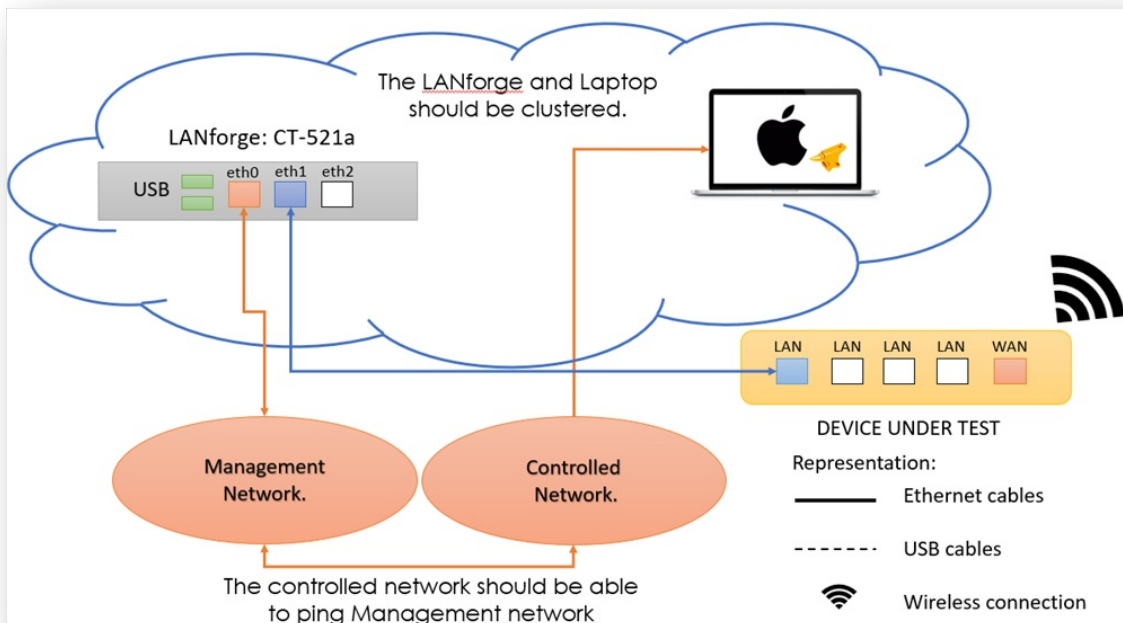
Background

The LANforge InterOp solution of Candela technologies are used to support real clients for testing Access Points. InterOp gives the ease of handling real clients with complete automation and populate a detailed reports on the entire duration of the test.

We have support for various kinds of real clients:

- Android clients.
- iOS clients.
- Windows Machines.
- Linux Machines.
- MacOS Machines.

Network Topology:



Before getting started:

- The LANforge Manager this MacOS machine will be clustered with must be in clustering mode. That includes configuring the realm, mode, and resource number of the manager, as well as having the right licenses. Please verify you have the correct licenses and follow this [cookbook](#) to set your manager up.
- All applications requiring internet for installation should be installed before starting the LANforge server.

MacOS Device Initial Setup

1. Create a user account named "lanforge". This account will have administrator permissions by default if it is the only user account on the macOS machine.
2. Sign in to your Apple ID and allow the MacOS machine to proceed through its initial setup process.
3. Once the Mac desktop is accessible, open the Settings app.
4. Navigate to sharing settings under general settings. Enable screen sharing and remote login. Also allow VNC viewers to login with a password. This allows the machine to be managed with VNC and/or SSH.
5. Navigate to Energy settings. Enable start up automatically after a power failure. Should the machine experience a loss of power, you will need to physically power the machine on without this setting.
6. Verify that the lanforge user has admin permissions. Inside settings, navigate to Users & Groups. Next to the lanforge user, click the info button. if there are other user accounts on the machine. Toggle the setting: "Allow user to administer this computer" to on and enter your password.
7. In the same Users & Groups settings, set automatically login as to the lanforge user account. This ensures remote access is not interrupted when the Mac reboots.
8. If the lanforge user did not automatically have admin permissions, reboot the system.

Steps to install LANforge Server on MacOS machine

1. Open a new terminal.
2. Type in the command: `sudo su - root` to become root user.

```
home — bash — 80x24
~ -- -bash ... /home -- -bash /home -- -bash +
[apples-MacBook-Air-2:home apple$ sudo su - root
[Password:
apples-MacBook-Air-2:~ root#
```

3. Type into the terminal:

1. `curl -o lf_kinstall.pl https://www.candelatech.com/lf_kinstall.pl`

Then, press enter. This command downloads Candela's server installation script.

```
home — bash — 80x24
~ -- -bash ... /home -- -bash /home -- -bash +
[apples-MacBook-Air-2:~ root# curl -o lf_kinstall.pl https://www.candelatech.com/lf_kinstall.pl
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 559k 100 559k 0 0 214k 0 0:00:02 0:00:02 --:--:-- 215k
apples-MacBook-Air-2:~ root#
```

2. `chmod a+x lf_kinstall.pl`

Then, press enter. This command give permissions and set proper bits.

```
home — bash — 80x24
~ -- -bash ... /home -- -bash /home -- -bash +
[apples-MacBook-Air-2:~ root# chmod a+x lf_kinstall.pl
apples-MacBook-Air-2:~ root#
```

3. `./lf_kinstall.pl --do_all_ct --lfver 5.5.2`

Then, press enter. This command runs the server installation script we downloaded above (with the proper arguments).

```
# [12.6] Command: ./lf_kinstall.pl --do_all_ct --lfver 5.4.6
=====
# Done.
[apples-MacBook-Air-2:~ root# ./lf_kinstall.pl --do_all_ct --lfver 5.4.6
grep: /proc/cpuinfo: No such file or directory
Argument "" isn't numeric in int at ./lf_kinstall.pl line 116.

INSTALL_LOG located at /var/root/tmp/lf_kinstall_20230317_121229.log

# Defaulting kernel version to 5.19.17+
# is-vm 0 is-ubuntu: 0 mate-inst'd: 0 install-mate: 0
# do-burn: 0 disk-test: 0 is-arm: 0 is-fedora: 0
# skip-burn: 1 do-gnome: 0 uveri: 14 rpi4: 0
# do_sys_rcfg: 0 is-deb-based: 0 osveri: 12603 osver: 12.6
# create-bndl: 0 use-bundle: 0 is-64: 1
# skip-kern: -1 kver: 5.19.17+ do_upgrade: 0 do_grub: 0
# Determining if: /tmp is readable
# Determining if --tmp_dir /tmp is writable
# no license.txt found
Checking md5sum of ./lf_kinstall.pl...
##### 100.0%
```

4. Type in the terminal: `cd /Users/lanforge` and press enter. Then, type in: `./lfconfig` and press enter. These 2 commands change terminal to `/Users/lanforge` and run the command to configure LANforge realms.

```

apples-MacBook-Air-2:/ root# cd Users/lanforge/
apples-MacBook-Air-2:lanforge root# sudo ./lfconfig
Interfaces: USB 10/100 LAN, Wi-Fi
Resource interface assignment:
  Resource 44: Wi-Fi
Specified Resource Addresses:

Key                Acceptable Values          Value
*****
log_level          [0-65535]                  7
log_dir            [directory path]          /Users/lanforge
add_resource_addr  [host:port]                SEE LIST ABOVE
rem_resource_addr  [host:port]                SEE LIST ABOVE
realm              [1-255]                    41
resource           [1-511]                    44
mgt_dev            [ethernet device]         USB 10/100 LAN
mode               [resource, manager, both] resource
log_file_len       [0-2G]                     0
bind_mgt           [0-1]                      0
shelf              [1-8]                      1
dev_ignore         [eth0 eth1 ... ethN]
first_cli_port     [1025-4199]                4001
connect_mgr        [host:port]                192.168.200.239:4002
gps_dev            [device file]              NONE

```

5. Specify your lanforge ip manager and press enter. Below is the example of specifying manager 192.168.200.239

`connect_mgr 192.168.200.239:4002`

```

Your command: connect_mgr 192.168.200.239:4002

Interfaces: USB 10/100 LAN, Wi-Fi
Resource interface assignment:
  Resource 44: Wi-Fi
Specified Resource Addresses:

Key                Acceptable Values          Value
*****
log_level          [0-65535]                  7
log_dir            [directory path]          /Users/lanforge
add_resource_addr  [host:port]                SEE LIST ABOVE
rem_resource_addr  [host:port]                SEE LIST ABOVE
realm              [1-255]                    41
resource           [1-511]                    44
mgt_dev            [ethernet device]         USB 10/100 LAN
mode               [resource, manager, both] resource
Other Commands:    help, show_all
*****

If these values are correct, enter 'config', otherwise change
the values by entering the key followed by the new value, for example:
mode manager
Your command: █

```

8. Specify your realm id and press enter. Below is command example of specifying realm 41.

`realm 41`

```
Your command: realm 41
```

```
Interfaces: USB 10/100 LAN, Wi-Fi
```

```
Resource interface assignment:
```

```
Resource 44: Wi-Fi
```

```
Specified Resource Addresses:
```

Key	Acceptable Values	Value

log_level	[0-65535]	7
log_dir	[directory path]	/Users/lanforge
add_resource_addr	[host:port]	SEE LIST ABOVE
rem_resource_addr	[host:port]	SEE LIST ABOVE
realm	[1-255]	41
resource	[1-511]	44
mgt_dev	[ethernet device]	USB 10/100 LAN
mode	[resource, manager, both]	resource

```
Other Commands: help, show_all
```

```
*****
```

If these values are correct, enter 'config', otherwise change the values by entering the key followed by the new value, for example:

```
mode manager
```

```
Your command: █
```

9. Set a resource number for your laptop. This is any resource number that is already used. Below is an example of using resource 44. Press enter after the command is typed.

```
resource 44
```

```
Your command: resource 44
```

```
Interfaces: USB 10/100 LAN, Wi-Fi
```

```
Resource interface assignment:
```

```
Resource 44: Wi-Fi
```

```
Specified Resource Addresses:
```

Key	Acceptable Values	Value

log_level	[0-65535]	7
log_dir	[directory path]	/Users/lanforge
add_resource_addr	[host:port]	SEE LIST ABOVE
rem_resource_addr	[host:port]	SEE LIST ABOVE
realm	[1-255]	41
resource	[1-511]	44
mgt_dev	[ethernet device]	USB 10/100 LAN
mode	[resource, manager, both]	resource

```
Other Commands: help, show_all
```

```
*****
```

If these values are correct, enter 'config', otherwise change the values by entering the key followed by the new value, for example:

```
mode manager
```

```
Your command: █
```

10. Give mode as resource to act the Mac laptop as resource using the command below. Then press enter.

```
mode resource
```

```
Your command: mode resource
```

```
Interfaces: USB 10/100 LAN, Wi-Fi
```

```
Resource interface assignment:
```

```
Resource 44: Wi-Fi
```

```
Specified Resource Addresses:
```

Key	Acceptable Values	Value

log_level	[0-65535]	7
log_dir	[directory path]	/Users/lanforge
add_resource_addr	[host:port]	SEE LIST ABOVE
rem_resource_addr	[host:port]	SEE LIST ABOVE
realm	[1-255]	41
resource	[1-511]	44
mgt_dev	[ethernet device]	USB 10/100 LAN
mode	[resource, manager, both]	resource

```
Other Commands: help, show_all
```

```
*****
```

If these values are correct, enter 'config', otherwise change the values by entering the key followed by the new value, for example:

```
mode manager
```

```
Your command: █
```

11. Type in `config` and enter to save changes.
12. Start the lanforge server by typing in `./serverctl.bash start` and pressing enter.

```
[apples-MacBook-Air-2:lanforge apple$ sudo ./serverctl.bash start ]
[Password: ]
chown: lanforge: illegal group name
chown: lanforge: illegal group name
Stopping LANforge server processes.
Stopping LANforge with /Users/lanforge/lf_stop

lf_stop: Killing process: 354 (run_client_44.PID)

lf_stop: Killing (hard) process: 354 (run_client_44.PID)
kill: 354: No such process

lf_stop: Killing process: 8273 (btserver_44.PID)

lf_stop: Killing (hard) process: 8273 (btserver_44.PID)
kill: 8273: No such process
Stopping any virtual_router setup scripts.
Stopping any XORPsh_helper.pl scripts.
Stopping any gen_cfg.pl scripts.
Killing wifi event helpers.....
./serverctl.bash: line 202: rfcill: command not found
Killing all Xorp router processes just in case..... DONE
Verifying that DHCP server is installed..... FAILED
ERROR: DHCP server is not available on this system. Configuring
```

After starting the LANforge server, go to the Lanforge GUI Port Mgr tab to find your MacOS machine clustered.

LANforge Manager Version(5.4.6)

Control Reporting Windgws Info Tests

Status Port Mgr Extended Port Mgr Layer-3 L3 Endps Layer 4-7 RF-Generator Generic Test Mgr Resource Mgr Interop DUT Profiles Traffic-Profiles Alerts Warnings

Disp: 192.168.200.239:10.0 Sniff Packets Down Clear Counters Reset Port

Rpt Timer: medium (8 s) Apply VRF Display Crgate

All Ethernet Interfaces (Ports) for all Resources.

Port	Ø	I	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX	Collisions	RX Errors	TX Errors	RX
1.01.0			192.168.200.239	0	eth0		91,425,745	868,634	37	49,834	203,364,021	246,689	22	100,584	0	0	0	0
1.01.1			192.168.1.5	0	eth1		49,429,542	65,654	0	583	504,140,690	372,499	0	0	0	0	0	0
1.01.2			0.0.0.0	0	eth2		0	0	0	0	0	0	0	0	0	0	0	0
1.01.3			0.0.0.0	0	wiphy0		0	0	0	0	0	0	0	0	0	0	0	0
1.01.4			0.0.0.0	0	wiphy1		0	0	0	0	0	0	0	0	0	0	0	0
1.44.0			192.168.211.101	0	en2		4,295,449,330	4,294,970,...	15	19,881	4,295,926,200	4,294,968,...	8	40,454	0	0	0	0
1.44.1			192.168.1.2	0	en0	wiphy0	77,501	400	0	899	34,277	122	0	876	0	0	0	0
1.44.2			0.0.0.0	0	wiphy0		0	0	0	0	0	0	0	0	0	0	0	0

Resource Mgr tab will also show the laptop and the resource id that was given earlier above to the MacOS machine.

Status Port Mgr Extended Port Mgr Layer-3 L3 Endps Layer 4-7 RF-Generator Generic Test Mgr Resource Mgr Interop

Netsmith Modify Disconnect Restart

Remmina VNC Upgrade Resources

EID	Shelf	Phan...	Hostname	User	Ctrl-IP	Tx Bytes	Rx Bytes	bps-TX-3s	bps-RX-3s	Ctrl-port
1.1	1		ct521b-0fef		192.168.200.239	390,899,039	12,592,383	45,981	16,962	4004
1.44	1		apples-MacBook-Ai...		192.168.211.101	7,207,010	235,776	20,157	986	4002

Now en0 port can be used as station of laptop wiphy radio and run traffic.

Upgrading LANforge Software on MacOS

1. Open a terminal
2. Type in the command: `sudo su - root` to become root user.
3. Type into the terminal:
 1. `curl -o lf_kinstall.pl https://www.candelatech.com/lf_kinstall.pl`

Then, press enter. This command downloads Candela's server installation script.

```

home — bash — 80x24
~ -- -bash ... /home -- -bash /home -- bash +
[apples-MacBook-Air-2:~ root# curl -o lf_kinstall.pl https://www.candelatech.com/lf_kinstall.pl
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 559k 100 559k 0 0 214k 0 0:00:02 0:00:02 ---:--:-- 215k
apples-MacBook-Air-2:~ root#

```

2. `chmod a+x lf_kinstall.pl`

Then, press enter. This command give permissions and set proper bits.

```
home — bash — 80x24
~ -- -bash ... /home -- -bash /home -- bash +
[apples-MacBook-Air-2:~ root# chmod a+x lf_kinstall.pl
apples-MacBook-Air-2:~ root#
```

3. `./lf_kinstall.pl --do_upgrade --lfver 5.5.2`

Then, press enter. This command runs the server installation script we downloaded above (with the proper arguments).

```
# [12.6] Command: ./lf_kinstall.pl --do_all_ct --lfver 5.4.6
=====
# Done.
[apples-MacBook-Air-2:~ root# ./lf_kinstall.pl --do_all_ct --lfver 5.4.6
grep: /proc/cpuinfo: No such file or directory
Argument "" isn't numeric in int at ./lf_kinstall.pl line 116.

INSTALL_LOG located at /var/root/tmp/lf_kinstall_20230317_121229.log

# Defaulting kernel version to 5.19.17+
#   is-vm 0      is-ubuntu: 0      mate-inst'd: 0      install-mate: 0
#   do-burn: 0   disk-test: 0      is-arm: 0           is-fedora: 0
#   skip-burn: 1 do-gnome: 0      uveri: 14          rpi4: 0
#   do_sys_rcfg: 0 is-deb-based: 0  osveri: 12603      osver: 12.6
#   create-bndl: 0 use-bundle: 0    is-64: 1
#   skip-kern: -1 kver: 5.19.17+  do_upgrade: 0      do_grub: 0
# Determining if: /tmp is readable
# Determining if --tmp_dir /tmp is writable
# no license.txt found
Checking md5sum of ./lf_kinstall.pl...
##### 100.0%
```