

Install Script lf_kinstall.pl

Goal: Install and reconfigure your LANforge server with the lf_kinstall.pl script.

The lf_kinstall.pl script can configure a majority of Linux OS features that LANforge requires changes to. This includes:

- Disabling SELinux
- Disabling firewall
- Downloading dnf and LANforge updates
- Adding VNC and RDP access
- Adding firmware
- Disabling or reconfiguring NetworkManager
- Enabling serial console
- Modifying kernel options for iommu, pci-aer and kernel memory
- ...and more...

Usage

```
lf_kinstall.pl --lfver {lanforge version} --kver {kernel version} {command}
```

Note: the parameters --do_kern and --do_grub requires the --kver option to specify the kernel version. CandelaTech Linux kernels end with "+" to denote extra patches. Use --debug | --verbose | -d to enable debugging.

Example: `./lf_kinstall.pl --kver 3.5.7+ --lfver 5.2.7 --do_lanforge`

Parameters

lfver

Specify LANforge version (i.e., 5.2.6)

kver

Specify kernel version, use a + at the end of kernel versions for CandelaTech kernels

skip_kern

Do not install a kernel package, suppresses do_grub, do_kern

hwver

Specify the hardware string: CT521, CT52x-PR, CT521, CT520, LF0202, CT523, CT523c, CT314, LF0312, LF0313, CT522 Can help with html info page configuration. Leave blank if unsure.

com-speed

Specify serial com speed (defaults to 115200)

com_port

Specify the serial com port (defaults to ttyS0)

source_dir

Specify location of installation files (must be absolute path).

tmp_dir

Specify the script temporary working directory and backups of system files.

download_only

Download files to tmp-dir, but do not install them or make other changes.

ignore_err

Ignore any (otherwise fatal) errors. May be useful for offline installs where some functionality is better than none.

proxy

Use a proxy for curl, e.g. `http://%user:%password@%proxy-ip:%port`

do_all_ct

Enables all options except: `--xrandr`, `--runlevel`

do_all

Enables all options except: `--xrandr`, `--biosdevname`, `--runlevel`, and `--serial` Skips the CPU burn-in test.

do_upgrade

Upgrades LANforge software, kernel, firmware, packages and OS packages. No system settings altered. Skips cpu-burn.

do_update

alias for `do_upgrade`

do_ct_st

Download and install LANforge software and kernel only. Enables '`do_lanforge do_kern do_grub do_http do_selinux=0 do_iommu=0 do_firmware`' No yum update. No system settings altered, except for selinux and iommu.

do_ct_swak

Download and install LANforge software but only update grub to point to an already installed kernel. Enables '`do_lanforge do_grub do_http do_selinux=0 do_iommu=0 do_firmware`' No system settings altered, except for selinux and iommu.

do_lanforge

Installs LANforge software ONLY, i.e. no kernel installed. No system settings altered.

do_firmware

Download and install ath10k 802.11AC NIC firmware.

do_kern

Install the kernel via download or `--source_dir`. Enables '`do_grub`' option.

do_radius

Install and configure radius server (with default values).

skip_radius

Do not attempt to reconfigure radius. Useful when attempting to speed up `do_sys_reconfig` on slow systems.

force_new_certs

Re-generate the HotSpot 2.0 R2 (HS20-R2) and/or RADIUS certs, even if we have previously created them.

do_hs20

Build keys, configure apache ssl and other actions to enable this system to act as an HS20-R2 server. Requires specific LANforge configuration as well before this will actually work. This option must be explicitly enabled: It is not enable as part of any of the other option groupings.

hs20_server_ip

IP Address to advertise as HS20 servers. This could be IP address of management port in simple configurations, and for more realistic configurations, perhaps the IP address of something in same network as the HS20 OSEN and .1x APs.

build_scrpcy

Clone and build scrcpy tool (should not be needed for latest 5.4.6 builds)

do_services

Enable/Disable services to work well with LANforge.

ntwk_mgr_ok

Enable NetworkManager. It is disabled by default.

do_pkgs

Install packages from Internet needed by LANforge.

show_large_pkgs

Show top 20 largest packages. Useful during do_image_prep if you want to reduce install footprint.

do_only_pkgs

Only install packages (and groups) and exit. Use when creating VMs or if you want to install all distro packages and reboot before proceeding. If you want to download everything needed, install yum packages for development imaging:

- 1) touch /home/lanforge/did_cpuburn /home/lanforge/did_disktest
- 2) ./lf_kinstall.pl --lfver ___ --kver ___ --do_selinux=0 --skip_yum_all
- 3) ./lf_kinstall.pl --lfver ___ --kver ___ --skip_yum_all --do_all_ct --force_web \
--tmp_dir /home/lanforge/Downloads --download_from http://ctdownloads/ --download_only
- 4) reboot
- 5) ./lf_kinstall.pl --lfver ___ --kver ___ --do_only_pkgs
- 6) poweroff and make your snapshot

do_yum_update

Update OS packages from Internet.

use_yum_cache

do not erase and rebuild yum cache

do_selinux

Configure selinux (it conflicts with LANforge.) do_grub should also be enabled to modify the kernel boot commands.

- 0: Disabled (default, if do_all and related options are selected)
- 1: Enabled
- 1: Use current settings

do_grub

Modify the grub config files to boot the specified kernel.

do_xrandr

Add work-around to disable LVDS1 using xrandr. This works around Gnome issues on the Lanner WiFi appliances, and perhaps other systems.

do_vnc

Configure VNC for user lanforge.

do_http

Serve LANforge related files at <http://localhost>

do_gnome

Tweak gnome settings (enable desktop icons, etc)

do_udev

Create `/etc/udev/rules.d/70-persistent-net.rules` file if it does not already exist. It may still need hand-editing.

do_biosdevname

Enable biosdevname for interface names (uses terms like enp0s1 instead of eth0). Only takes affect when `--do_grub` is enabled.

- 0: Disabled

- 1: Enabled
- 1: Use current settings (default)

do_serial

Enable serial console configuration in grub.

- 0: Disabled
- 1: Enabled
- 1: Use current settings (default) Only takes affect when do_grub is enabled.

do_runlevel

Configure system to run-level 3 or 5

- 0: Use current settings (do nothing)
- 3: Set to use runlevel 3 (non graphical login)
- 5: Set to use runlevel 5 (graphical login, needed for cinnamon)

do_elevator

Add kernel option elevator=noop (i.e. not deadline) for single SSD CFQ optimisation.

- 0: Disabled
- 1: Enabled
- 1: Use current settings (default) Only takes affect when do_grub is enabled.

do_cma

Configure cma buffer for extra VRF buffer space. Use with `--do_grub`, applies on reboot. Use these choices:

- 1: do not change
 - 0: disable
 - 1: apply 64 megabyte value
 - >1: apply this value in megabytes
- Example: `--do_grub --do_cma 48`

do_iommu

Configure system to enable/disable intel_iommu. This kernel feature decreases performance, so LANforge typically wants this disabled for optimal Ethernet performance. This can also be disabled in the BIOS by disabling the VT-d option and IOMMU options.

- 0: Disabled (default for do_all_ct, do_all, do_ct_swak, do_ct_st)
- 1: Enabled
- 1: Use current settings (default) Only takes affect when do_grub is enabled. IOMMU is useful in these conditions: * virtual machine hosting * MediaTek radios * Ath10k radios

do_nomitigations

Configure system to enable/disable spectre and related mitigations. We try to compile out most of these security features since LANforge is not designed to be secure and performance is more important to us. To help make sure all of these mitigations are disabled, we will also pass command-line args to the kernel on bootup to request disabling mitigations. Default is '1'.

- 0: Do not add the mitigations=off option
- 1: Do add the mitigations=off (default)
- 1: Use current settings Only takes affect when do_grub is enabled.

set_swiotlb

Configure IOMMU buffer size. Requires you use IOMMU setting, so use with `--do_grub --do_iommu=1`

Example: `--do_grub --do_iommu=1 --set_swiotlb=65536`

do_noaer

Configure system to enable/disable pci error reporting. Requires `--do_grub`.

- 0: Disabled (removes grub bootline parameter)
- 1: Enabled (adds pci=noaer bootline parameter, DEFAULT)
- 1: Use current settings

do_kmemleak

Configure kernel option for kmemleak. Requires kernel to be compiled with appropriate options to actually enable this.

- 0: Disabled

1: Enabled

-1: Use current settings (default) Only takes affect when do_grub is enabled.

do_ssd_fstab

Modify rw behaviour for SSDs in /etc/fstab.

do_save_yumc

Specify:

1: Yum update then save cache.

20: Delete local cache first then update and save.

do_sys_reconfig

Attempt to re-configure system config files. Only works on certain platforms (APU2, Jetway, Noah2, Axiomtek)

do_vm_reconfig

forces --do_sys_reconfig to run, looking for enpX interfaces and no radios

skip_ifrename

avoids renaming interfaces and rewriting 70-persistent-net

do_ff_homepage

updates Firefox Homepage

do_mgt_dev

Set LANforge management interface, defaults to eth0 on most platforms. Does not presently use --mgt_dev option.

make_ifcfg_eth0

Creates /etc/sysconfig/network-scripts/ifcfg-eth0 from the eth0 entry found in /etc/udev/rules.d/70-persistent-net.rules. Fedora only. Edit 70-persistent first.

do_make_clean

Delete previous install files.

do_cpu_burn

Attempts the CPU burn task. NOTE: The --skip_cpu_burn flag below has precedence.

0: Do not attempt it.

1: Do it if we have not already run it on this system previously.

2: Always run it.

>10: Run CPU burn test for specified seconds.

do_disk_test

should we fill and re-read disk to make sure it performs well?

0: Do not attempt it

1: Do it if /home/lanforge/did_disktest not found unless --skip_disk_test specified

>1: Always run it, ignoring --skip_disk_test

skip_disk_test

avoid do_disk_test if /home/lanforge/did_disktest is missing

do_xrdp

should we adjust the xrdp.ini and sesman.ini files:

0: ignore files

1: adjust files

nocache

Add fake URL argument to disable any HTTP caching.

no_fmmirror

Uninstall yum-fastest mirror.

help

Show usage help.

show_urls

Show URLs for all files that should be downloaded, and exit.

print_only

show_urls without website check

print_windows

print out .bat file contents to help with downloading LANforge updates

force_web

Force script to use webserver. Do not use with `--source_dir`.

download_from

Specify web url to download LANforge packages from, implies `--force_web`

build_url

This path is appended directly after the `--download_from` hostname. The default download path will not be used. The string `r$ifver` will not be inserted. Build paths will not adhere to a directory pattern, use the full path.

create_install_bundle

create a tarball in `tmp_dir` for copying to another LANforge system, will infer `--osver`, `--osveri` for current system unless you specify `--force_osver`, `--force_osveri`

use_install_bundle

`/path/to/bundle.tar` : Upgrade LANforge using an install bundle file. Sets `$source_dir`, `$tmp_dir` to directory containing `bundle.tar` file.

force_notes

Force creating `lfnotes.html`

force_osver

Override the detected osver string with this value.

force_osveri

Override the detected osversion integer with this value.

skip_grub

Don't do kernel install, even if other options would have selected it.

skip_gui

Don't install LANforge-GUI, even if other options would have selected it.

skip_xorp

Don't install Xorp virtual-router package, even if other options would have selected it.

skip_fmIRROR

Don't alter systems existing use of yum-plugin-fastestmirror.

skip_cpu_burn

Don't burn-in CPU.

skip_yum_update

Don't yum update packages.

skip_yum_all

Don't yum update packages, or install new ones.

skip_resume

Don't try to use HTTP resume when downloading packages.

fix_web_root

Enable `do_http` and reset the `httpd.conf` `DocumentRoot` and `Directory` from

/home/lanforge/candela_cdrom to /var/www/html

do_image_prep

Erase the network settings and dnf cache in preparation for making a disk image for a clone. Expects /root/resize-home.sh

do_vm_prep

Erase the network settings and dnf cache in preparation for making a OVA image. Expects /root/resize-home.sh

do_fedrepos_default

Select this option to use the fedrepos default command if your yum.repos.d repository URLs have become misconfigured. If fedrepos is not available, consider --do_restore_metalinks option.

do_restore_metalinks

Select this option if you see errors like below:

- 1) Repository updates-debuginfo has no mirror or baseurl set.
- 2) Repository updates-source has no mirror or baseurl set.
- 3) Repository fedora-debuginfo has no mirror or baseurl set.
- 4) Repository fedora-source has no mirror or baseurl set.
- 5) Error: Failed to synchronize cache for repo 'updates'
- 6) Your /etc/yum.repos.d repo files have had changes and are unable to reach mirrors.fedoraproject.org

do_enable_archive_baseurl

Select this option if your mirrors.fedoraproject.org URLs are unable to provide your repository because the content has been moved to archives.fedoraproject.org This option is pretty much opposite of --do_restore_metalinks.

add_random_www_data

creates a series of files in /var/www/html accessible using the url /slug_list.html

bind_apache_mgt_port

configures an /etc/hosts entry lanforge-srv that matches the ip address of the mgt_dev in /home/lanforge/config.values. Updates the /etc/httpd or /etc/apache2 files to bind to that address. Use this option each time you change the mgt_dev.

install_vlc

VLC video player requires RPMFusion repository. This adds the repository and then installs VLC.

download_videos

shortcut for downloading Candelatech videos into /var/www/html/videos so that they might be served for video testing. See /usr/local/lanforge/nginx/video.inc for stanza when enabling directory listings when using nginx.

do_rfggen

shortcut to install packages necessary for using RF generator hardware

do_abandoned_cleanup

create cronjob that espunges systemd slices from logged out session every hour

remove_passwords

removes the passwords from accounts root and lanforge and reconfigures sshd to accept empty passwords. Yes...really, it IS crazy, right?

do_print_label

Use the following two options to print a label with model and mac address information

- 1) print_host: hostname owning printer
- 2) print_queue: name of print queue, often 'QL-800' or 'LaserWriter-450'
- 3) serialno: provide the serial number for chassis, or use 'HOSTNAME'

Example: --do_print_label --print_host 192.168.100.14:8082 --print_queue QL-800 --serialno HOSTNAME

skip_installer_check

turn off checking md5sum of `./lf_kinstall.pl`

regen_https_key

regenerate the `/etc/pki/tls/$hostname.crt` and `.key` files so that they have F33+ 4096 bit keys, not smaller keys.

update_pip

Upgrades pip userland

skip_pip

Avoid doing pip upgrades; might be necessary if you have proxies

reset_pip

Use when pip3 updates were installed as root and you have system pip3 package conflicts. This will reinstall the python-pip3 package and `'pip3 remove -r requirements.txt'` to remove pip3 libraries from system folder. Follow this with `--update_pip` to get pip3 libraries into user lanforge folder.

rebuild_pip

this will uninstall the python pip user environments and build a new one from `scripts/requirements.txt`; if you see errors, you probably are missing newly required library packages provided by the distro. To make sure your packages are up to date, use:

Example: `./lf_kinstall.pl --do_pkgs`

install_pip_lanforge_scripts

this does a pip3 install of lanforge-scripts. This is not necessary if you just need to use `/home/lanforge/scripts/py-scripts` casually.

disable_audit_logs

Affects kernel audit messages. Use with `--do_grub` and reboot to have this setting take effect.

0: enable kernel audit logs (auditd.service not enabled)

1: disable kernel audit logs

do_enable_max_zram

write `/etc/sysctl.d/70-lanforge.conf` and apply aggressive zram configuration (Fedora >= 30) To undo, remove file and reboot.

do_gui_autostart

Start GUI in VNC server session which starts on boot. Requires LANforgeGUI of specified version to already be installed.

0: disable GUI autostart

1: enable GUI autostart

save_gui_cfg

Use this to restore GUI settings on reboot. Running this a second time copies a changed `LANforgeGUI/lfcfg.txt` file to `$home` to save new changes.

1) backup: copies the `LANforgeGUI/lfcfg.txt` file to `$home`. Disables `lfcustom_gui.bash` if it exists.

2) static: implies backup, creates `lfcustom_gui.bash` that replaces `lfcfg.txt` into LANforgeGUI directory every time LANforgeServer is started.

remove_pipewire

Removes pulseaudio-pipewire packages.

0: do not remove pipewire (default)

1: remove pipewire

do_interop

installs LANforge server, GUI, firmware and required packages on system to sufficient to allow it to be a resource in a LANforge cluster. Right now, this focuses on Ubuntu based systems. This also will configure Networkmanager to ignore ports except the management interface. We cannot necessarily disable NM on interop equipment.

regen_nm_conf

backs up `/etc/NetworkManager/NetworkManager.conf` and recreates one that specifies that no interfaces except the one with the default route be managed. Enabled by default during `do_interop`. NM settings you do not want modified should live in separate conf files in `/etc/NetworkManager/conf.d`. When this option is used without the `--mgt_dev` option, a new management device will be determined. Default value is 1.

0: do not modify `NetworkManager.conf`

1: update `NetworkManager.conf` and `mgt_dev.nmconnection`

2: update `NetworkManager.conf`, `mgt_dev.nmconnection`, but do not restart `NetworkManager`

mgt_dev

indicate what interface should be configured as the management interface. LANforge works best in cases where there is a dedicated management interface and management network (out of band management). In the case there is only one interface and it has to serve as a traffic port and a management port, that is possible (in band management). Currently this option is only used by the `--regen_nm_conf` option. If this option is not specified Specify one of these options:

1) `{interface_name}`: name of the interface to set

2) "existing": force the use of the `mgt_dev` in `/home/lanforge/config.values`

mgt_dns

specify IP address to add to `[ipv4]mgt_dev.dns` value in `mgt_dev.nmconnection`

mgt_ip

specify either "dhcp" or a "ip/cird/gateway" combination for `mgt_dev.nmconnection`:

1) `mgt_ip=dhcp`

2) `mgt_ip=192.168.208.24/20/192.168.208.1`

disable_resolved

change `NetworkManager dns=systemd-resolved` to `dns=default` and disable `systemd-resolved.service`

`create_raid` | `make_raid` | `create_lvm` | `make_lvm` : turn two or more blank drives into a mirrored LVM filesystem. If there have been filesystems installed on these drives before, use `--wipe_raid` to remove the filesystems. `wipe_raid` | `remove_raid` | `remove_lvm` : remove LVM volumes and signatures from specified disks. Use this before doing `--create_raid` the first time on any disk that already has a filesystem.

create_webpage

turn this help into html text for publication `*_dd`

Note: If you use commands "yum update" or "dnf update", and you need to use a kernel provided by the repository, use:

Example: `grub2-mkconfig -o /boot/grub2/grub.cfg`