The Software of the MNT Reform

Main properties (sales pitch):

✔ Bit-by-bit reproducible
✔ No superuser privileges required
✔ Cross buildable (from amd64 to arm64)
✔ stable+bpo (reform.d.n), unstable (mntre.com)
✔ Signed with key from debian-keyring

Repository

TLDR: `extrepo enable reform.debian.net`

- Debian Linux plus patches & dtbs
- Platform specific customizations
  - utilities for flashing, hardware setup, handbook, configuration
  - udev rules (pulseaudio profile)
  - initramfs hooks & scripts
  - systemd configs (suspend)
  - dkms module (LPC)
  - desktop wallpaper & fonts
- Patched flash-kernel (and mesa gst-plugins-*, ffmpeg, ...)

System Images

1) Run mmdebstrap `mmdebstrap --architectures=arm64 --components=main,non-free-firmware --variant=minbase --`

```
verbose '--include=weyland xterm xwayland fonts-inter fonts-noto-color-emoji weyboard rwaylbrk rwaylock mesa-utils lopalbit weyland-protocols wmfi wireplumber pasirus-icon-theme libglib2.0-
bin gnettings-desktop-schemas gnome-disk-utility gnome-themes-extra-data gnome-icon-theme gnome-settings-daemon gnome-system-monitor grim kitty gedit evince mpv sxiv gvfs-backends
unicode-data engrampa neverball minetest qjdict kde-style-breeze dunst pavucontrol pkexec pulseaudio-utils python3 python3-gi synaptic thunar xll-server-utils fonts-font-awesome' '--include=wayfire reform-firedacor firefox
tuigreet' '--include=grounds2 iptables iostutils-ping elinks isc-dhcp-client netcat-traditional net-tools network-manager network-manager-gnome nfacct ntp ntpdate rsync telnet traceroute
wpasupplicant curl wget w3m rfkill ifupdown methase openssh-client bluemon firmware-realtek reform-gcacl32' '--include=apt apt-utils apt-listbugs apt-file cron cryptsetup lvm2 dbus-bin
alfprogs fbset init-system-helpers parted psutils pciutils procps sudo systemd systemd-sysv tmux u-boot-tools screen gnetd' '--include=busybox console-data console-setup cpio
file flash-kernel gnupg gpgv htop kbd lm-sensors readline-common usbutils xdg-utils bsdmainutils less nano micro vim alsa-utils dosfstools python3-psutil reform-handbook' '--
include=brightnessctl brightness-udev ca-certificates debian-archive-keyring dialog gpm ncurses-term locales bash-completion man-db rfkeystop-initrdmfs linux-image-arm64 linux-headers-
arm64 reform-tools gpiod' '--setup-hook=mkdir -p $1"/etc/apt/sources.list.d" '--setup-hook=[ echo "Package: *"; echo "Pin: release o=reform, l=reform"; echo "Pin-Priority: 990"; ] >
"$1"/etc/apt/preferences.d/reform.pref' '--setup-hook=copy-in entire.keyring /etc/apt/sources.list.d/' '--customize-hook=rpc-out /usr/share/reform-tools/machines /machines' '--
customize-hook=APT_CONFIG=$MMDEBSTRAP_APT_CONFIG python3 -c '\"import apt_pkg;apt_pkg.init();cache=apt_pkg.Cache(None);print(\"\n\".join(sorted([f\"{pkg.name:<44}
{pkg.current_ver.ver_str}\" for pkg in cache.packages if pkg.current_ver for pfile,_ in pkg.current_ver.file_list if not pfile.not_source and not
pfile.site.endswith(\".debian.org\")))\"\" > "$1"/custom-pkgs.lst' '--customize-hook=copy-out /custom-pkgs.lst . '' '--customize-hook=rm "$1"/custom-pkgs.lst' '--setup-hook=[ echo
"Package: *"; echo "Pin: release o=reform-local-repo, l=reform-local-repo"; echo "Pin-Priority: 1000"; ] > "$1"/etc/apt/preferences.d/reform-local-repo.pref' '--customize-hook=rm
"$1"/etc/apt/preferences.d/reform-local-repo.pref' '--setup-hook=echo "deb [arch=arm64 trusted=yes] http://127.0.0.1:8000/ ./" > "$1"/etc/apt/sources.list.d/reform-local-repo.list' '--
customize-hook=rm "$1"/etc/apt/sources.list.d/reform-local-repo.list' '--essential-hook=[ echo LINUX_KERNEL_CMDLINE=\"\"; echo LINUX_KERNEL_CMDLINE_DEFAULTS=\"\"; ] >
"$1"/etc/default/flash-kernel' '--essential-hook=echo tzdata tzdata/Areas select Europe | chroot "$1" debconf-set-selections' '--essential-hook=echo tzdata tzdata/Zones/Europe select
Berlin | chroot "$1" debconf-set-selections' '--essential-hook=echo locales locales/default_environment_locale select en_US.UTF-8 | chroot "$1" debconf-set-selections' '--essential-
hook=echo locales locales/locales_to_be_generated multiselect en_US.UTF-8 UTF-8 | chroot "$1" debconf-set-selections' '--customize-hook=rm -f "$1"/etc/motd' '--customize-hook=ln -s motd-
full "$1"/etc/motd' '--customize-hook=echo \"\"\"if [ "$(whoami)" = "root" ]; then cat /etc/reform-root-help; elif [ -z "$WAYLAND_DISPLAY" ]; then cat /etc/reform-help; fi\"\" >>
"$1"/etc/skel/.profile' '--customize-hook=chroot "$1" sh -c "rsync -PRa /etc/skel/ /root"' '--chroot=d-customize-hook=systemctl --root=/ disable greetd' '--customize-hook=mkdir -p
"$1"/etc/systemd/system/getty@tty1.service.d' '--customize-hook=printf '[Service]\nExecStart=\nExecStart=-/sbin/agetty -a autologin root --noclear %%I $TERM\n' >
"$1"/etc/systemd/system/getty@tty1.service.d/override.conf' '--customize-hook=mkdir -p "$1"/usr/share/reform-setup-wizard/cleanup.d' '--customize-hook=copy-in reform-setup /usr/bin' '--
customize-hook=copy-in reform-setup.sh /etc/profile.d' '--customize-hook=copy-in reform-setup-swap-config /usr/share/reform-setup-wizard' '--customize-hook=copy-in reform-setup-
cleanup.sh /usr/share/reform-setup-wizard/cleanup.d' '--customize-hook=chmod 755 "$1"/usr/bin/reform-setup' '--customize-hook=chmod 755 "$1"/usr/share/reform-setup-wizard/cleanup.d/*'
'--essential-hook=[ echo LABG=reformedroot / auto errors=remount-ro 0 1; echo LABG=reformedboot /boot auto errors=remount-ro 0 1; ] > "$1"/etc/fstab' '--customize-hook=echo reform >
"$1"/etc/hostname' '--customize-hook=[ echo 127.0.0.1 localhost reform; echo ::1 localhost ip6-localhost ip6-loopback reform; echo ff02::1 ip6-allnodes; echo ff02::2 ip6-allrouters; ] >
"$1"/etc/hosts' '--customize-hook=sed -i "s/^KEXTRA_GROUPS=.*/EXTRA_GROUPS=audio cdrom dip floppy video plugdev netdev/" "$1"/etc/adduser.conf' '--customize-hook=sed -i
"s/^ADD_EXTRA_GROUPS=.*/ADD_EXTRA_GROUPS=1/" "$1"/etc/adduser.conf' '--customize-hook=echo "root:root" | chroot "$1" chpasswd' '--customize-hook=chroot "$1" sed -i
"s/^root:[^:]\+:/root::/" /etc/shadow' '--customize-hook=rm "$1"/etc/resolv.conf' '--customize-hook=download /vmlinuz kernel' '--customize-hook=download /initrd.img initrd' '--customize-
hook=tar -out /boot boot.tar' '--mode=unshare unstable --format=directory --mode=unshare --skip=output/dev /home/josch/git/reform-system-image/tmp.ht40pzJU96
```

2) Split tarball into /boot (platform specific) and / (identical)
3) Run parted and mke2fs
4) Flash u-boot to start of disk
5) Boot via SD-Card or eMMC on i.MX8MQ, i.MX8MPlus, LS1028A, BananaPi CM4, Rockchip RK3588

Debian Installer

- Initrd from `http://ftp.debian.org/debian/dists/bookworm/main/installer-arm64/current/images/netboot/debian-installer/arm64/initrd.gz`
- Filter cpio to remove /lib/modules
- Append cpio with new modules
- Append cpio with new content:
  - preseed.cfg
  - post-base-installer (apt config, apt pinning, extra packages)
  - finish-install (debconf questions, flash u-boot)
- mkfs.fat --invariant && sfdisk
- mcopy linux, initrd, dtb, extlinux
- Flash u-boot to start of disk

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https://reform.debian.net, https://mntre.com, https://source.mnt.re/reform, https://salsa.debian.org/reform-team