

# Create custom debian live usb-stick (uefi / bios dual boot)

## Install necessary packages on the build system

```
root@host:~# apt-get install debootstrap squashfs-tools rsync xorriso grub-  
pc-bin grub-efi-amd64-bin mtools  
[ ... ]
```

## Create directory structure & install base image

```
root@host:~# mkdir /root/shtf-stick && cd /root/shtf-stick  
  
root@host:~/shtf-stick# debootstrap --arch=i386 --variant=minbase stretch  
chroot http://http.at.debian.org/debian/  
[ ... ]
```

## Perform basic configuration

```
root@host:~/shtf-stick# chroot ./chroot  
root@host:/# echo shtf > /etc/hostname  
root@host:/# passwd root  
Enter new UNIX password:  
Retype new UNIX password:  
passwd: password updated successfully  
root@host:/# mount none -t proc /proc && \  
mount none -t sysfs /sys && \  
mount none -t devpts /dev/pts && \  
export HOME=/root && \  
export LC_ALL=C && \  
apt-get update && \  
apt-get install dialog dbus --yes && \  
dbus-uuidgen > /var/lib/dbus/machine-id  
  
root@host:/# apt-get install --no-install-recommends --yes linux-image-686  
firmware-linux-free systemd-sysv live-boot kbd console-data  
[ ... ]
```

## Install additional packages

```
root@host:/# apt-get install --no-install-recommends --yes \  

```

```
network-manager net-tools wireless-tools wpaui tcpdump wget openssh-client  
\  
blackbox xserver-xorg-core xserver-xorg xinit xterm \  
pciutils usbutils gparted ntfs-3g hfsprogs rsync less curl tcpdump  
dosfstools syslinux partclone vim pv \  
firefox-esr chntpw lvm2 mdadm keepassx gdisk gnupg duplicity s3cmd bzip2  
lsof screen mc htop iproute2 inetutils-ping inetutils-traceroute netcat-  
openbsd extundelete  
  
[ ... ]
```

## Cleanup & leave chroot environment

```
root@host:/# rm -f /vmlinuz* /initrd.img* /var/lib/dbus/machine-id && \  
apt-get clean && \  
rm /etc/resolv.conf && \  
umount -lf /proc /sys /dev/pts  
  
root@host:/# exit  
exit  
root@debian:~/shtf-stick# umount -lf $(mount | awk '/shtf-stick/ { print $3  
'})  
root@host:~/shtf-stick# rm chroot/root/.bash_history
```

## Create filesystem & boot config

```
root@host:~/shtf-stick# mkdir -p ./{scratch,image/live} && \  
mksquashfs chroot image/live/filesystem.squashfs -e boot  
Parallel mksquashfs: Using 1 processor  
Creating 4.0 filesystem on image/live/filesystem.squashfs, block size  
131072.  
[=====]  
=====/] 25507/25507 100%  
  
Exportable Squashfs 4.0 filesystem, gzip compressed, data block size 131072  
compressed data, compressed metadata, compressed fragments, compressed  
xattrs  
duplicates are removed  
Filesystem size 305495.00 Kbytes (298.33 Mbytes)  
39.71% of uncompressed filesystem size (769303.94 Kbytes)  
Inode table size 311570 bytes (304.27 Kbytes)  
29.08% of uncompressed inode table size (1071399 bytes)  
Directory table size 300335 bytes (293.30 Kbytes)  
42.66% of uncompressed directory table size (703968 bytes)  
Number of duplicate files found 809  
Number of inodes 30836
```

```
Number of files 21710
Number of fragments 2182
Number of symbolic links 6003
Number of device nodes 8
Number of fifo nodes 0
Number of socket nodes 0
Number of directories 3115
Number of ids (unique uids + gids) 10
Number of uids 2
  root (0)
  systemd-timesync (100)
Number of gids 9
  root (0)
  shadow (42)
  utmp (43)
  rtkit (109)
  tty (5)
  systemd-journal (101)
  staff (50)
  adm (4)
  mail (8)
root@host:~/shtf-stick#
root@host:~/shtf-stick# cp chroot/boot/vmlinuz-* image/vmlinuz && \
cp chroot/boot/initrd.img-* image/initrd
root@host:~/shtf-stick# cat <<'EOF' > ./scratch/grub.cfg

search --set=root --file /DEBIAN_CUSTOM

insmod all_video

set default="0"
set timeout=30

menuentry "SHTF Live Stick" {
  linux /vmlinuz boot=live noquiet nomodeset
  initrd /initrd
}
EOF
root@host:~/shtf-stick#
root@host:~/shtf-stick# touch ./image/DEBIAN_CUSTOM
```

## Prepare USB stick

```
root@host:~/shtf-stick# export DEVICE=/dev/sdc
root@host:~/shtf-stick# mkdir -p /mnt/{usb,efi}
```

## Create GPT & MBR partition tables

```
root@host:~/shtf-stick# dd if=/dev/zero of=${DEVICE} bs=1k count=100
100+0 records in
100+0 records out
102400 bytes (102 kB) copied, 1.5086 s, 67.9 kB/s
root@host:~/shtf-stick# parted --script ${DEVICE} \
    mklabel gpt \
    mkpart primary fat32 2048s 4095s \
        name 1 BIOS \
        set 1 bios_grub on \
    mkpart ESP fat32 4096s 413695s \
        name 2 EFI \
        set 2 esp on \
    mkpart primary fat32 413696s 100% \
        name 3 LINUX \
        set 3 msftdata on

root@host:~/shtf-stick# gdisk ${DEVICE} << EOF
r      # recovery and transformation options
h      # make hybrid MBR
1 2 3  # partition numbers for hybrid MBR
N      # do not place EFI GPT (0xEE) partition first in MBR
EF     # MBR hex code
N      # do not set bootable flag
EF     # MBR hex code
N      # do not set bootable flag
83     # MBR hex code
Y      # set the bootable flag
x      # extra functionality menu
h      # recompute CHS values in protective/hybrid MBR
w      # write table to disk and exit
Y      # confirm changes
EOF
```

## Create & mount filesystems

```
root@host:~/shtf-stick# mkfs.vfat -F32 ${DEVICE}2 && mkfs.vfat -F32
${DEVICE}3
root@host:~/shtf-stick# mount ${DEVICE}2 /mnt/efi && mount ${DEVICE}3
/mnt/usb
```

## Install grub for UEFI and BIOS

```
root@host:~/shtf-stick# grub-install \
    --target=x86_64-efi \
```

```
--efi-directory=/mnt/efi \  
--boot-directory=/mnt/usb/boot \  
--removable \  
--recheck  
  
root@host:~/shtf-stick# grub-install \  
--target=i386-pc \  
--boot-directory=/mnt/usb/boot \  
--recheck \  
${DEVICE}  
  
root@host:~/shtf-stick#
```

## Create USB Stick

```
root@host:~/shtf-stick# mkdir -p /mnt/usb/{boot/grub,live} && \  
cp -ar ./image/* /mnt/usb/ && \  
cp -a ./scratch/grub.cfg /mnt/usb/boot/grub/grub.cfg && \  
umount /mnt/{usb,efi}
```

Source: <https://willhaley.com/blog/custom-debian-live-environment/>

[kb](#), [linux](#), [shtf](#), [usb-stick](#)

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