

Manual Windows USB Bootable Drive Creation Guide

Prerequisites

Required Tools

```
bash
```

```
sudo apt-get install dosfstools ntfs-3g grub-pc-bin grub-efi-amd64-bin wimtools parted util-linux
```

Identify Your Devices

```
bash
```

```
# Find your USB device (e.g., /dev/sdb)
```

```
lsblk
```

```
# or
```

```
sudo fdisk -l
```

WARNING: Double-check your target device! All data will be erased.

Method 1: Device Mode (Full Device, FAT32)

This completely wipes the USB drive and creates a fresh bootable device.

Step 1: Unmount Any Existing Partitions

```
bash
```

```
# Replace /dev/sdX with your device
```

```
sudo umount /dev/sdX*
```

Step 2: Wipe Existing Signatures

```
bash
```

```
sudo wipefs --all /dev/sdX
```

Step 3: Create New Partition Table

```
bash
```

```
sudo parted /dev/sdX --script mklabel msdos
```

Step 4: Create Primary Partition

```
bash

# Start at 4MiB for GRUB compatibility
sudo parted /dev/sdX --script mkpart primary fat32 4MiB 100%
```

Step 5: Format as FAT32

```
bash

sudo mkfs.vfat -F 32 -n "Windows USB" /dev/sdX1
```

Step 6: Refresh Partition Table

```
bash

sudo blockdev --rereadpt /dev/sdX
sleep 3
```

Step 7: Mount Source ISO

```
bash

mkdir -p /tmp/woeusb-source
sudo mount -o loop,ro /path/to/windows.iso /tmp/woeusb-source
```

Step 8: Mount Target Partition

```
bash

mkdir -p /tmp/woeusb-target
sudo mount -t vfat -o utf8=1 /dev/sdX1 /tmp/woeusb-target
```

Step 9: Copy Files

```
bash

# Copy all files from ISO to USB
sudo cp -r /tmp/woeusb-source/* /tmp/woeusb-target/
sync
```

Step 10: Install GRUB for Legacy Boot

```
bash

sudo grub-install --target=i386-pc --boot-directory=/tmp/woeusb-target /dev/sdX --force
```

Step 11: Create GRUB Config

```
bash

sudo mkdir -p /tmp/woeusb-target/grub
sudo tee /tmp/woeusb-target/grub/grub.cfg > /dev/null << 'EOF'
ntldr /bootmgr
boot
EOF
```

Step 12: Windows 7 UEFI Workaround (if needed)

```
bash

# Check if Windows 7
if grep -q '^MinServer=7[0-9]\{3\}\.[0-9]' /tmp/woeusb-source/sources/cversion.ini 2>/dev/null; then
    # Extract UEFI bootloader
    sudo mkdir -p /tmp/woeusb-target/efi/boot
    7z e -so /tmp/woeusb-source/sources/install.wim "Windows/Boot/EFI/bootmgfw.efi" | \
        sudo tee /tmp/woeusb-target/efi/boot/bootx64.efi > /dev/null
fi
```

Step 13: Unmount

```
bash

sudo umount /tmp/woeusb-source
sudo umount /tmp/woeusb-target
rmdir /tmp/woeusb-source /tmp/woeusb-target
```

Method 2: Device Mode (Full Device, NTFS)

For images larger than 4GB (NTFS supports larger files).

Steps 1-6: Same as FAT32 method above

Step 7: Create NTFS Partition Instead

```
bash

# Create partition leaving space for UEFI:NTFS
sudo parted /dev/sdX --script mkpart primary ntfs 4MiB -- -2049s
sudo blockdev --rereadpt /dev/sdX
sleep 3
sudo mkntfs --quick --label "Windows USB" /dev/sdX1
```

Step 8: Create UEFI:NTFS Support Partition

```
bash
```

```
# Small FAT partition for UEFI boot support
```

```
sudo parted --align none /dev/sdX --script mkpart primary fat16 -- -2048s -1s
```

```
sudo blockdev --rereadpt /dev/sdX
```

```
sleep 3
```

Step 9: Download and Install UEFI:NTFS Image

```
bash
```

```
cd /tmp
```

```
# Download the UEFI:NTFS partition image from GitHub
```

```
wget "https://github.com/pbatard/rufus/raw/master/res/uefi/uefi-ntfs.img"
```

```
sudo dd if=/tmp/uefi-ntfs.img of=/dev/sdX2 bs=1M
```

Step 10: Mount and Copy Files

```
bash
```

```
mkdir -p /tmp/woeusb-source /tmp/woeusb-target
```

```
sudo mount -o loop,ro /path/to/windows.iso /tmp/woeusb-source
```

```
sudo mount -t ntfs-3g /dev/sdX1 /tmp/woeusb-target
```

Step 11: Copy Files (with large file support)

```
bash
```

```
# For files over 4GB, split WIM files
```

```
sudo cp -r /tmp/woeusb-source/* /tmp/woeusb-target/
```

```
# If install.wim is over 4GB and using FAT32, split it:
```

```
# (Not needed for NTFS, but shown for reference)
```

```
# sudo wimlib-imagex split /tmp/woeusb-source/sources/install.wim \
```

```
# /tmp/woeusb-target/sources/install.swm 4095
```

Steps 12-14: Continue with GRUB installation as in FAT32 method

Method 3: Partition Mode (Existing Partition)

Uses an existing partition without wiping the entire device.

Step 1: Check Target Filesystem

```
bash
```

```
lsblk -o NAME,FSTYPE,MOUNTPOINT /dev/sdX1
```

Step 2: Unmount if Mounted

```
bash
```

```
sudo umount /dev/sdX1
```

Step 3: Mount Source and Target

```
bash
```

```
mkdir -p /tmp/woeusb-source /tmp/woeusb-target
```

```
sudo mount -o loop,ro /path/to/windows.iso /tmp/woeusb-source
```

```
# For FAT32:
```

```
sudo mount -t vfat -o utf8=1 /dev/sdX1 /tmp/woeusb-target
```

```
# For NTFS:
```

```
# sudo mount -t ntfs-3g /dev/sdX1 /tmp/woeusb-target
```

Step 4: Copy Files

```
bash
```

```
sudo cp -r /tmp/woeusb-source/* /tmp/woeusb-target/
```

```
sync
```

Step 5: Install GRUB

```
bash
```

```
# Get parent device (remove partition number)
```

```
DEVICE=$(echo /dev/sdX1 | sed 's/[0-9]*$//')
```

```
sudo grub-install --target=i386-pc --boot-directory=/tmp/woeusb-target $DEVICE --force
```

Step 6: Create GRUB Config

```
bash
```

```
sudo mkdir -p /tmp/woeusb-target/grub
```

```
sudo tee /tmp/woeusb-target/grub/grub.cfg > /dev/null << 'EOF'
```

```
ntldr /bootmgr
```

```
boot
```

```
EOF
```

Step 7: Unmount

```
bash

sudo umount /tmp/woeusb-source
sudo umount /tmp/woeusb-target
```

Troubleshooting

BIOS Boot Flag Workaround

Some buggy motherboards need a boot flag:

```
bash

sudo parted /dev/sdX --script set 1 boot on
```

Check Free Space Before Copying

```
bash

# Check source size
du -sh /tmp/woeusb-source

# Check target free space
df -h /tmp/woeusb-target
```

Verify Partition Table

```
bash

sudo parted /dev/sdX print
```

Check Mount Status

```
bash

mount | grep sdX
```

Quick Reference Commands

Complete FAT32 One-Liner (Advanced Users)

```
bash
```

```
# WARNING: Verify device name first!
```

```
DEVICE=/dev/sdX
```

```
ISO=/path/to/windows.iso
```

```
sudo umount ${DEVICE}* 2>/dev/null || true
```

```
sudo wipefs --all $DEVICE
```

```
sudo parted $DEVICE --script mklabel msdos
```

```
sudo parted $DEVICE --script mkpart primary fat32 4MiB 100%
```

```
sudo mkfs.vfat -F 32 -n "Windows USB" ${DEVICE}1
```

```
sudo blockdev --rereadpt $DEVICE && sleep 3
```

```
mkdir -p /tmp/{woeusb-source,woeusb-target}
```

```
sudo mount -o loop,ro $ISO /tmp/woeusb-source
```

```
sudo mount -t vfat ${DEVICE}1 /tmp/woeusb-target
```

```
sudo cp -r /tmp/woeusb-source/* /tmp/woeusb-target/ && sync
```

```
sudo grub-install --target=i386-pc --boot-directory=/tmp/woeusb-target $DEVICE --force
```

```
echo -e "ntldr /bootmgr\nboot" | sudo tee /tmp/woeusb-target/grub/grub.cfg
```

```
sudo umount /tmp/woeusb-{source,target}
```

```
rmdir /tmp/woeusb-{source,target}
```

Important Notes

- Device vs Partition:** Use `/dev/sdX` for device mode, `/dev/sdX1` for partition mode
- Filesystem Choice:**
 - FAT32: Better compatibility, 4GB file limit
 - NTFS: Supports large files, requires UEFI:NTFS partition for some UEFI systems
- UEFI Boot:** Modern Windows ISOs support UEFI out of the box (except Windows 7)
- Legacy Boot:** GRUB chainloads Windows bootmgr for legacy BIOS systems
- Sync:** Always run `sync` before unmounting to ensure data is written

Verification

After completion:

```
bash
```

```
# Check partition table
```

```
sudo parted /dev/sdX print
```

```
# Check filesystem
```

```
sudo fsck.vfat /dev/sdX1 # for FAT32
```

```
# or
```

```
sudo ntfsfix /dev/sdX1 # for NTFS
```

```
# Verify files copied
```

```
sudo mount /dev/sdX1 /mnt
```

```
ls -la /mnt
```

```
sudo umount /mnt
```