



# Dus, guidus, mkusb version 12 quick start manual

by sudodus alias nio-wiklund at launchpad



# Prepare for mkusb

- Drives alias mass storage devices
  - You need two drives or mass storage devices (pendrive, flash card, HDD, SSD). The minimum sizes are 2 GB and 8 GB, but obviously the final operating system will soon need more space for your personal files as well as for additional system files (program packages),
    - a **drive for the installer** at least as big as the iso file for cloning, so minimum 2 GB for Ubuntu Server, 4 GB for standard Ubuntu desktop and the Ubuntu family flavours for a live only system and 8 GB or more for a persistent live system (typically a USB pendrive, but a memory card or an external SSD will also work),
    - a **drive for the target**, the final installed operating system (typically an internal drive, but it could also be connected via USB, eSATA or a card reader). Minimum 8 GB for Lubuntu but 16 GB or more is better, and standard Ubuntu desktop with a lot of snaps needs at least 32 GB.
- Backup
  - **Backup** all personal data before trying this method because the installer drive and maybe also the target drive will be completely overwritten

Tough guys never backup their data,  
they do the work twice instead ;-)



# Install or download mkusb

- Install (or download) the shell-script **mkusb** and
- download the **operating system** as a
  - hybrid iso file or compressed image file.
- mkusb can be installed from PPA with the following commands

```
sudo add-apt-repository ppa:mkusb/ppa # and press Enter
sudo apt-get update
sudo apt-get install mkusb
sudo apt-get install usb-pack-efi # for persistent live drives
```

  - Installing via PPA is the easy way to install and keep mkusb up to date automatically.
- For distros outside the [Ubuntu family](https://help.ubuntu.com/community/mkusb/gui/tarball), mkusb can be downloaded / installed starting by downloading from <https://phillw.net/isos/linux-tools/mkusb/>  
or  
<https://github.com/sudodus/tarballs>  
and download a tarball to be used according to instructions at the following pages  
<https://help.ubuntu.com/community/mkusb/gui/tarball>  
<https://help.ubuntu.com/community/mkusb/plug>
  - These instructions install mkusb-**dus** and/or **mkusb-plug** with a graphical user interface (plus text user interfaces to be used with text screens and in terminal windows). They are most likely to work in Debian and Linux distros based on Ubuntu and Debian. With distros that are more different, *cloning* is likely to work, but *not* creating persistent live drives.



# Files and checksums

- Current Ubuntu, Debian and many other linux iso files can be used (including the mini.iso files except the mini.iso of 12.04 LTS). Image files and compressed image files can also be used.

`file.iso`

`file.img`

`file.img.gz`

`file.img.xz`

- Windows 7-10 iso files

`windows.iso`

- Download also the corresponding checksum files, usually md5sum. See the following links

<https://help.ubuntu.com/community/mkusb>

<http://phillw.net/isos/linux-tools/mkusb/>



# Check download and clone image in Linux

- Change directory to where you have the downloaded files.
- Check that the download was successful with md5sum
  - Example: `md5sum xubuntu-20.04.2-desktop-amd64.iso`
- Use mkusb to install/clone/flash the operating system
  - mkusb helps you find the correct target drive and avoid the risk with dd.
- If installed, mkusb is in the system PATH and can be started
  - from the menu
    - menu – system – mkusb
  - or in **dash** (in standard Ubuntu) or similar tools to select installed application programs.
  - It can also be started from a terminal window or a text screen with
    - `mkusb` # or with an input file, for example
    - `mkusb xubuntu-20.04.2-desktop-amd64.iso`
    - `mkusb "path/file.iso"` # within quotes for special characters
- If downloaded, make mkusb executable `sudo chmod ugo+x mkusb`

Start from the menu in many distros



# Start mkusb from Activities in Gnome or Dash in Unity

If you remember the name,  
find **mkusb** after two letters

The screenshot shows a Linux desktop environment. In the top left, the 'Activities' button is visible. The top bar displays the time 'Thu 14:56' and the user 'sv'. A search bar in the center contains the text 'mkl'. To the right, a vertical sidebar (Dash) shows various application icons, including the mkusb icon (a green circle with a black USB symbol). A callout bubble points to the mkusb icon in the Dash, stating 'Click the icon to go'. Another callout bubble points to the search bar, stating 'If you remember the name, find **mkusb** after two letters'. Below the search bar, the mkusb icon is shown with the label 'mkusb' underneath it.



# Start mkusb in a terminal window

```
ubuntu@ubuntu: ~  
ubuntu@ubuntu:~$ man mkusb  
ubuntu@ubuntu:~$ man mkusb-nox  
ubuntu@ubuntu:~$ mkusb  
-----  
Usage: mkusb [input-file]      # optional parameter  
-----  
d: dus, guidus, mkusb-dus      - Classic, easy to use  
p: Plug, mkusb-plug           - New, easy to use  
n: NoX, sudo mkusb-nox        - original text mode  
b: Bas, sudo mkusb-bas        - basic text mode for old/basic linux  
e: Eleven, sudo -H mkusb-11    - Old user interface  
q: Quit  
-----  
Select version of mkusb (d/p/n/b/e/q) █
```



# Start mkusb via ssh in text mode

```

sudodus@bionic64: /home/sudodus/Downloads
dus 12.3.2 - Cloning, live linux, windows / Persistent live

```

Move between items with the arrow keys

- Do USB Stuff -

Welcome and Notice about Overwriting

The target device will be completely overwritten

- c** Cloning iso file, [compressed] image file or
- l** 'Live-only' or linux installer from iso file
- p** 'Persistent live' - only Debian and Ubuntu
- w** extracting Windows installer
- q** Quit

< **OK** >

*Shortcut: type **dus** to get directly to mkusb version 12*

```
ssh sudodus@bionic64
cd Downloads
dus lubuntu-18.04-desktop-amd64.iso
```





# ... more details

- The current version of mkusb uses a **text based console** and **graphical windows** to help you select the correct source file and target device. mkusb can monitor the data transfer with pv, and suggests that you install it, if not yet installed. pv shows Mibibytes and dd shows Megabytes.
- mkusb needs a number of help programs and suggests that you install them. If you cannot install some of these help programs, you should install **dus** or **mkusb-nox** or **mkusb-bas**, available at this link

<http://phillw.net/isos/linux-tools/mkusb/>

- mkusb is described with more details at the wiki page

<https://help.ubuntu.com/community/mkusb>

- If you have installed mkusb from the PPA, it will be updated together with other installed programs, and there are manual pages for mkusb and mkusb-nox

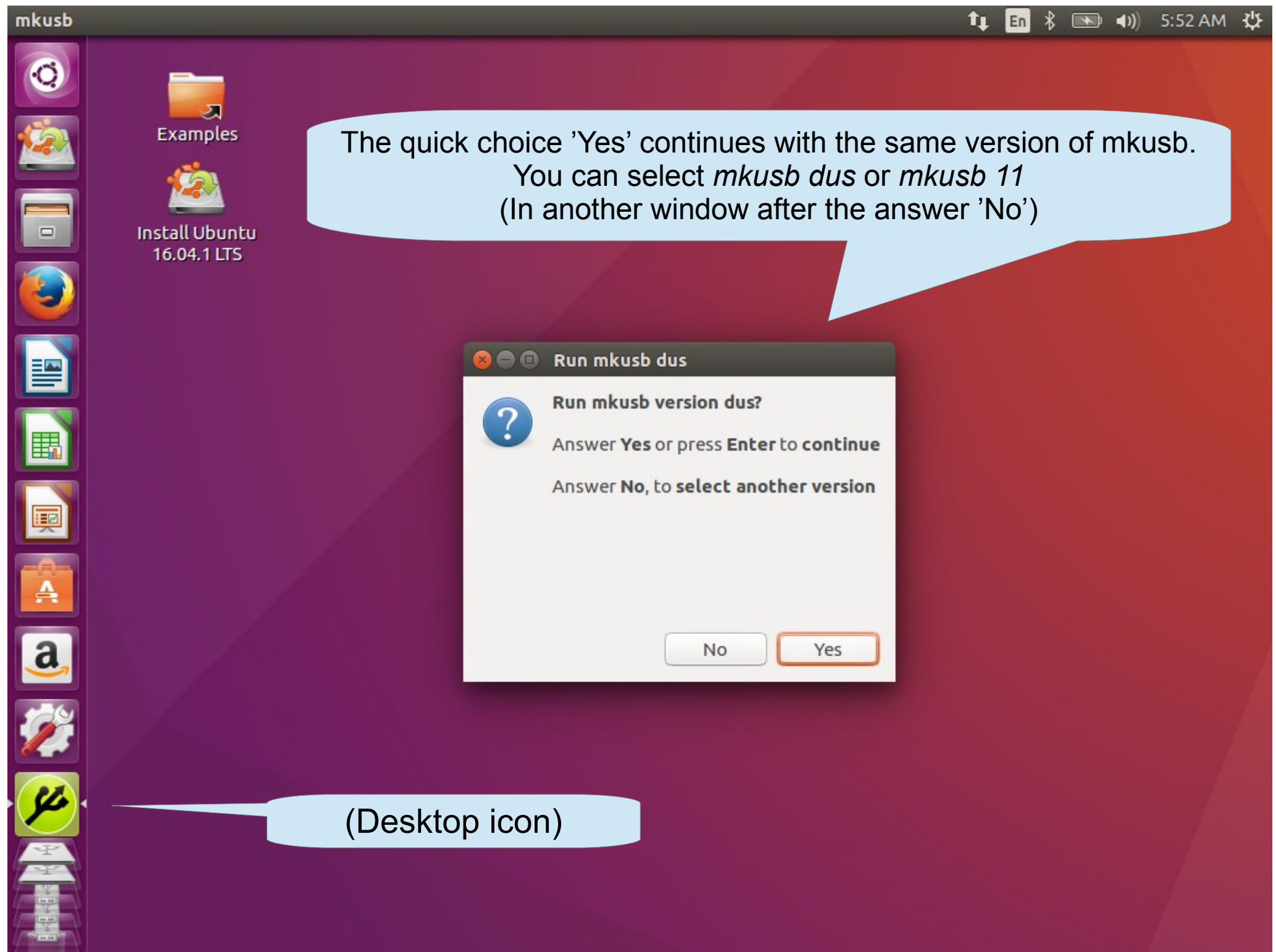
`man mkusb`

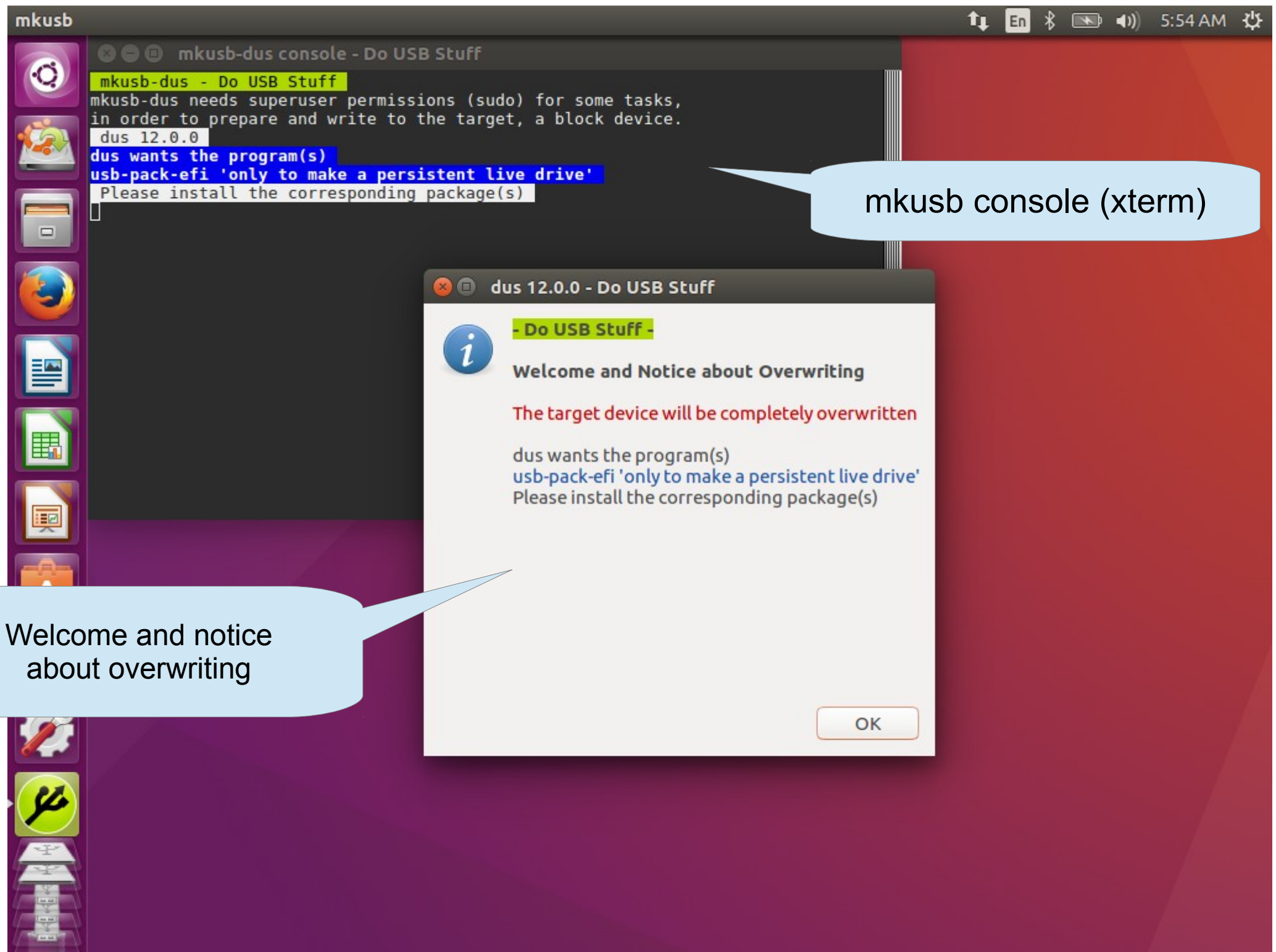
`man mkusb-nox`

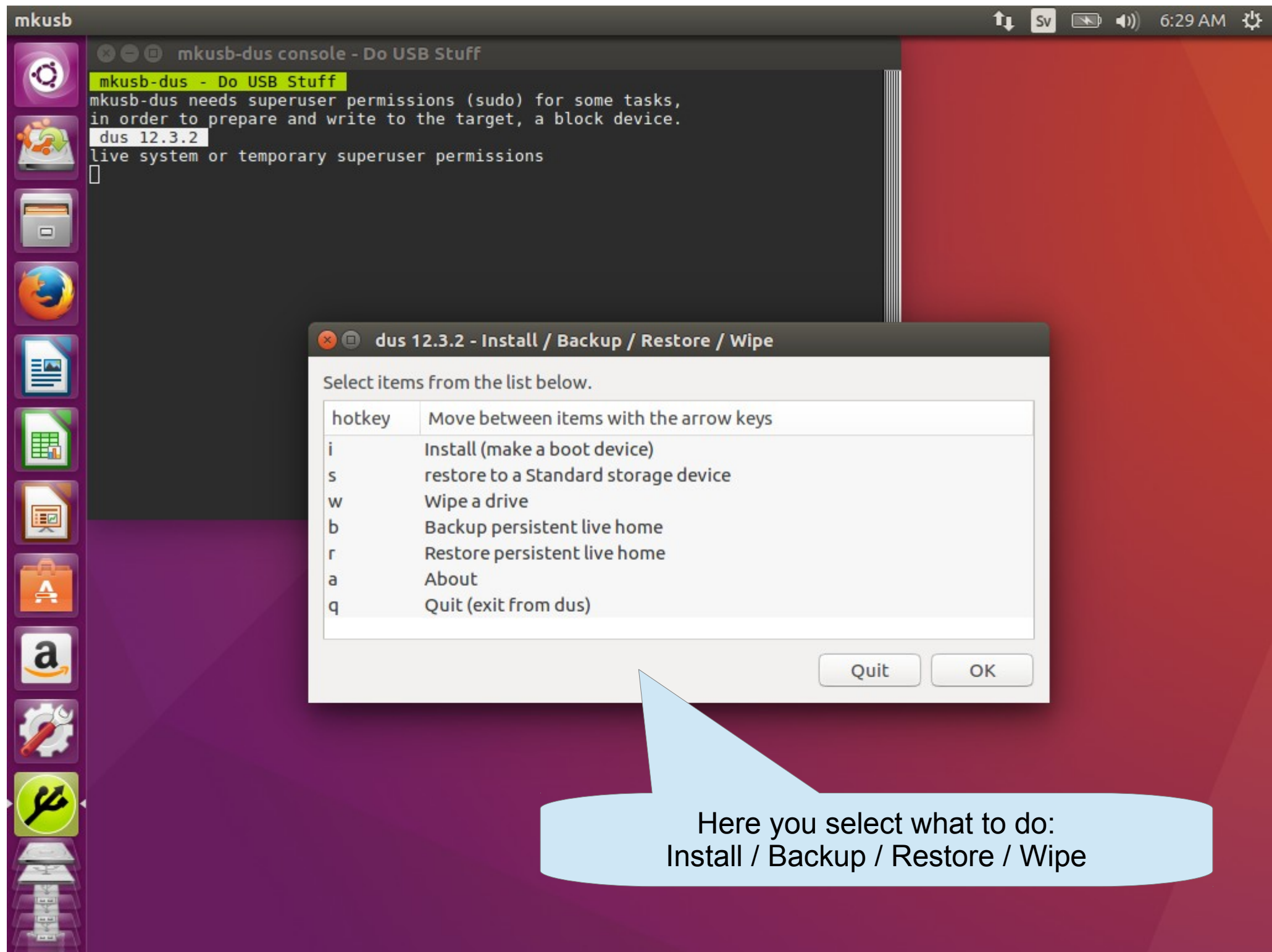


# Slideshow

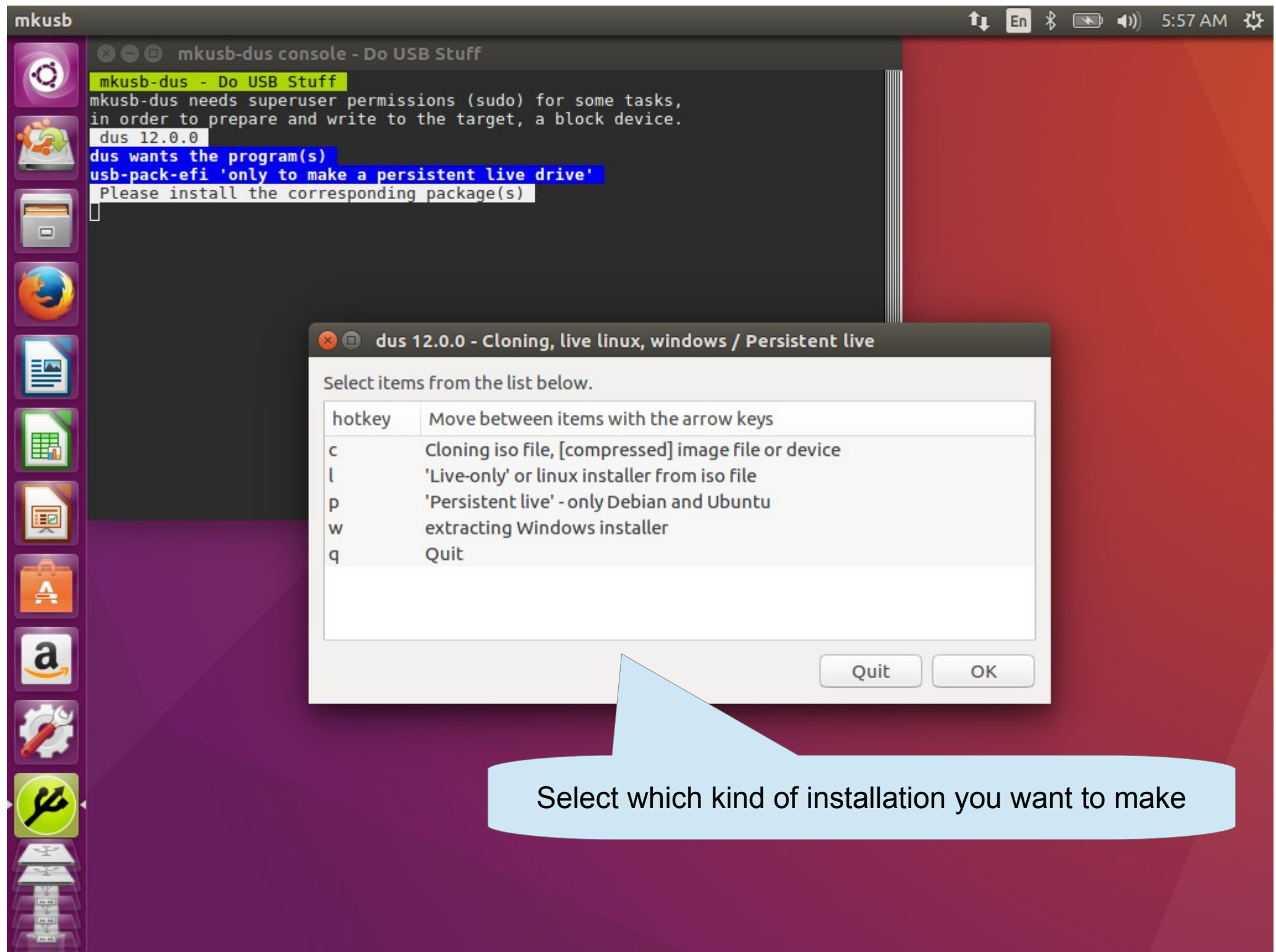
- This manual was made for mkusb version 12 alias dus with the GUI guidus.
- In order to get a view of mkusb version 11, you can watch the following slideshow,  
[mkusb-in-ubuntu\\_slideshow.pdf](#)













mkusb

mkusb-dus console - Do USB Stuff

mkusb-dus - Do USB Stuff

mkusb-dus needs superuser permissions (sudo) for some tasks,  
in order to prepare and write to the target, a block device.

dus 12.0.0

dus wants the program(s)

usb-pack-efi 'only to make a persistent live drive'

Please install the corresponding package(s)

dus 12.0.0 - Select source device

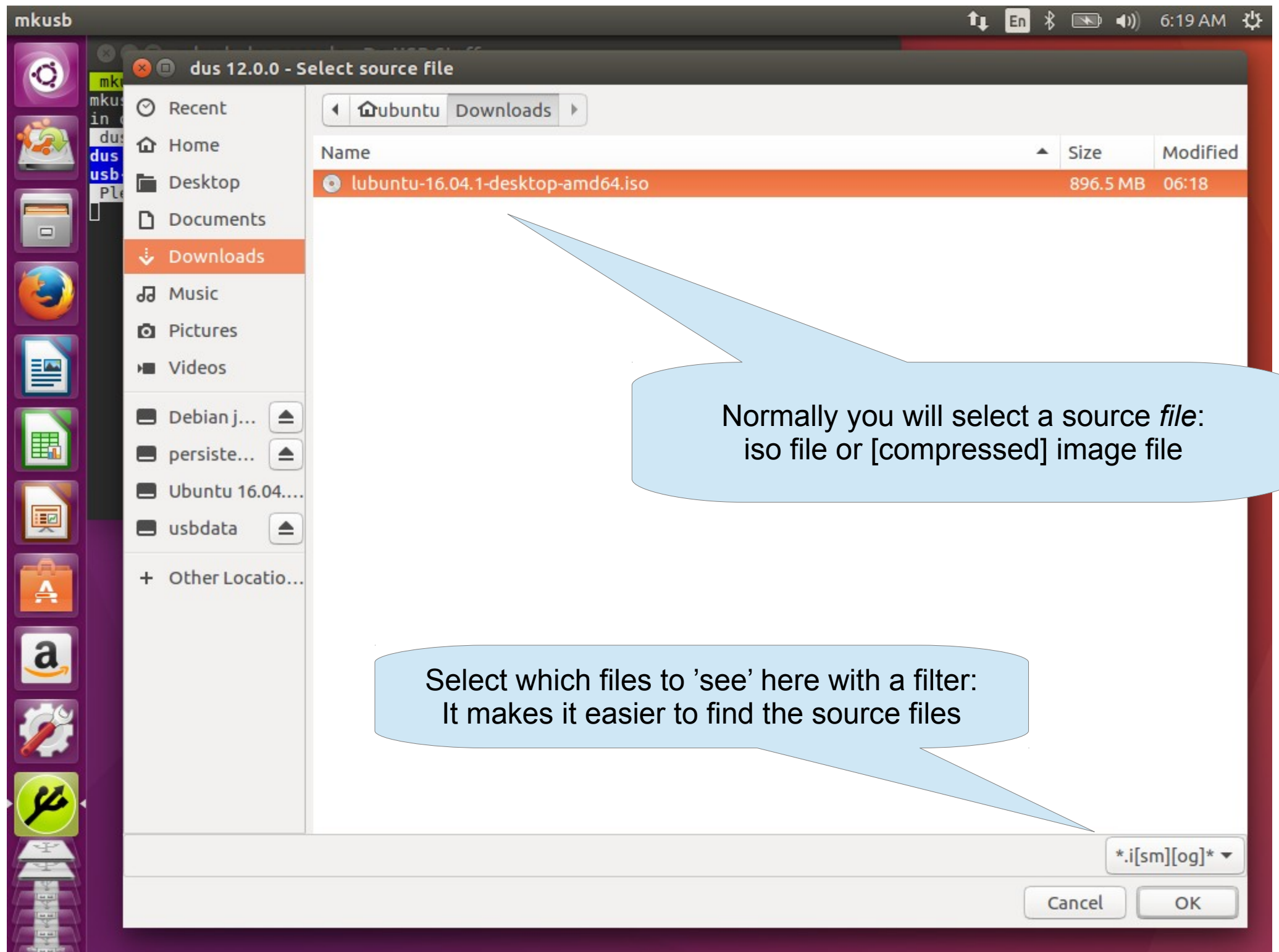
ISO 9660 partition found. Quick choice possible.  
Answer **No**, if you intend to install to the drive with **/dev/sda4**.

MODEL	NAME	SIZE	FSTYPE	LABEL	MOUNTPPOINT
Extreme	sda	29.8G			
	└sda4	1.4G	iso9660	Ubuntu 16.04.1 LTS amd64	/cdrom
FlashBlu	sdb	7.5G	iso9660	torios-live	
	└sdb1	729M	iso9660	torios-live	
Extreme	sd	14.9G			
	└sdc4	982M	iso9660	Debian jessie 20160917-14:56	/media/ubuntu/Debian
jessie 20160917-14:56					
CDDVDW SN-208AB	sr0	1024M			

Do you want to install **Ubuntu 16.04.1 LTS amd64**  
from the device **/dev/sda4** ?

No Yes

From an 'mkusb persistent live drive' you can use  
the *partition* with the image of the iso file as source







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dus 12.0.0

dus wants the program(s)  
usb-pack-efi 'only to make a persistent live drive'

Please install the corresponding package(s)

source device: /dev/sda4 'Ubuntu 16.04.1 LTS amd64'

Drive that contains source file: /dev/sda

Live drive, that is booted from: /dev/sda

cands=2

sdb

Kanguru\_FlashBlu

7.5G

usb

USB or memory card

sdc

SanDisk\_Extreme

14.9G

usb

USB or memory card

█

dus 12.0.0 - Select target device

Select items from the list below.

Select	Device	Target name/model	Size	Bus	Kind of device
<input checked="" type="radio"/>	sdb	Kanguru_FlashBlu	7.5G	usb	USB or memory card
<input type="radio"/>	sdc	SanDisk_Extreme	14.9G	usb	USB or memory card

Quit OK

Select target device: USB pendrive, memory card, HDD, SSD  
There will be an extra warning, if you select a HDD or SSD



mkusb

mkusb-dus console - Do USB Stuff

usb-pack-efi 'only to make a persistent live drive'  
Please install the corresponding package(s)  
source device: /dev/sda4 'Ubuntu 16.04.1 LTS'  
Drive that contains source file: /dev/sda  
Live drive, that is booted from: /dev/sda  
cands=2  
sdb  
Kanguru\_FlashBlu  
7.5G  
usb  
USB or memory card  
sdc  
SanDisk\_Ext  
14.9G  
usb  
USB or memo  
p target: t  
Clone/extr  
'/dev/sda4'  
to the targ  
MODEL  
FlashBlu

dus 12.0.0 - Final checkpoint, go ahead?

Select items from the list below.

Go/Stop	Clone/extract system from the source 'sda4' to the target device (drive) '/dev/sdb'	name size model sdb 7.5g flashblu
<input type="radio"/>	Stop	No, I am not sure yet
<input checked="" type="radio"/>	Go	Yes, I want to go ahead

Stop Go

Please double-check,  
that you have selected the correct target device,  
and 'Go' when you are sure

Clone from a partition



mkusb

mkusb-dus console - Do USB Stuff

Kanguru\_FlashBlu  
7.5G  
usb  
USB or memory card  
sdc  
SanDisk\_Extreme  
14.9G  
usb  
USB or memory card  
p\_target: target=/dev/sdc  
live system or temporary superuser permissions  
live system or temporary superuser permissions  
live system  
Clone/extract  
'/home/ubun  
to the targ  
MODEL  
Extreme

dus 12.0.0 - Final checkpoint, go ahead?

Select items from the list below.

Go/Stop	Clone/extract system from the source 'lubuntu-16.04.1-desktop-amd64.iso' to the target device (drive) '/dev/sdc'	name size model
<input checked="" type="radio"/> Stop	No, I am not sure yet	sdc 14.9g extreme
<input type="radio"/> Go	Yes, I want to go ahead	

Clone from an iso file

Please double-check,  
that you have selected the correct target device,  
and 'Go' when you are sure

Stop Go





The screenshot shows the mkusb application window titled "mkusb-dus console - Do USB Stuff". The terminal displays the following commands and output:

```
/dev/sda4
/dev/sdb
-----
live system or temporary superuser permissions
source=/dev/sda4
target=/dev/sdb
source=/dev/sda4
ls -l /dev/sda4
brw-rw---- 1 root disk 8, 4 Dec 31 05:42 /dev/sda4
Cloning a device to a USB drive or memory card .....
gpt_zap: done
Installing '/dev/sda4' to '/dev/sdb' ... :
< "/dev/sda4" pv | dd bs=4096
Please wait for sync until '
(flushing file system buffer
1.43GiB 0:01:35 [15.3MiB/s] [
374272+0 records in
374272+0 records out
1533018112 bytes (1.5 GB, 1.4
Syncing the device ...
Done :-)
```

A dialog box titled "dus 12.0.0 - check the result" is overlaid on the terminal. It contains the following text:

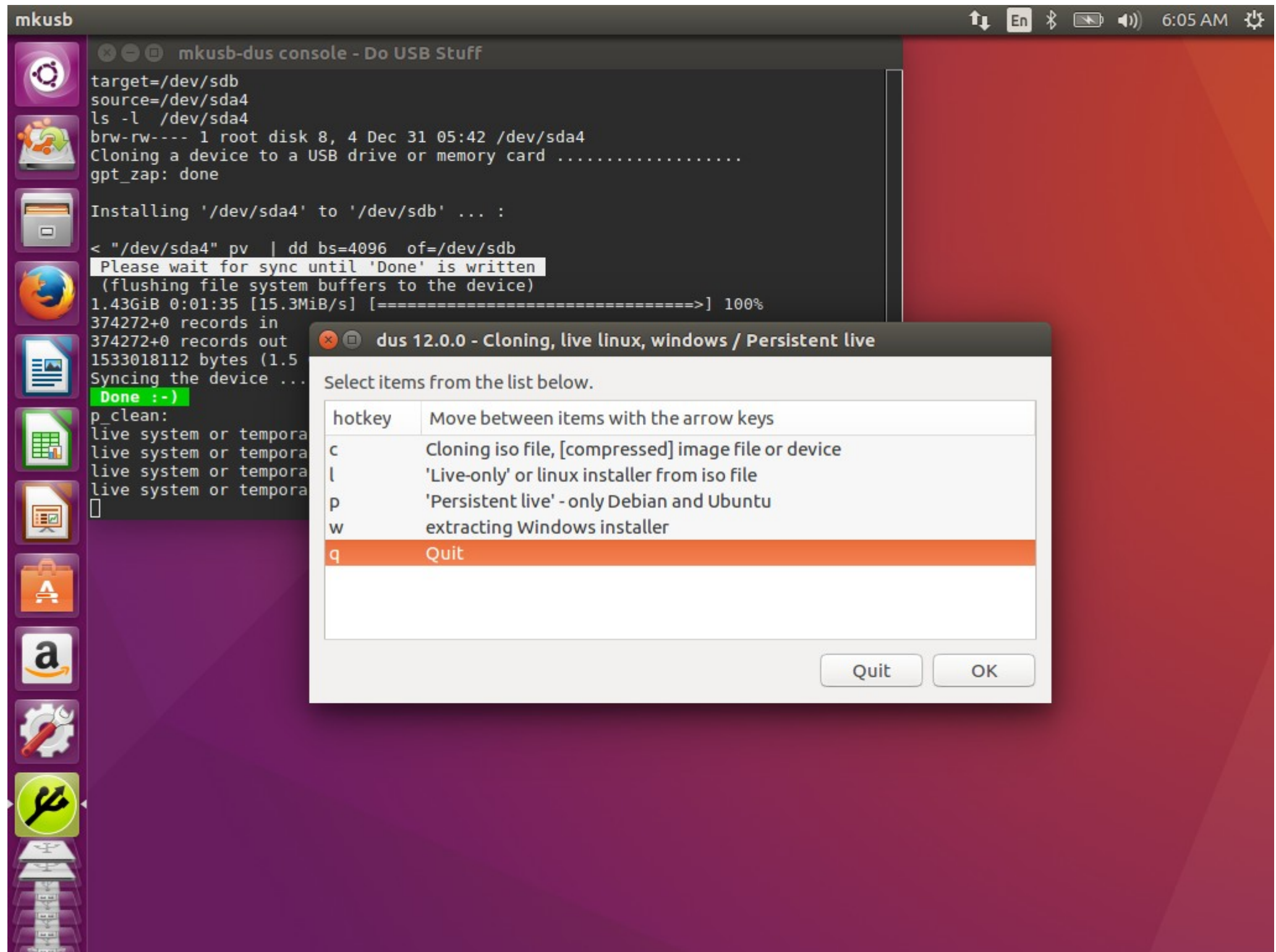
**Check the result (scroll if possible), press Enter to finish**

The target device is unmounted and you can unplug it.  
The system might not see the current partition table of the target device unless you re-plug it.

OK

A light blue callout bubble points to the "Done :-)" text in the terminal, containing the following instructions:

1. Check for **Done :-)**
2. Check the details if you wish





mkusb

mkusb-dus console - Do USB Stuff

```
Kanguru_FlashBlu
7.5G
usb
USB or memory card
sdc
SanDisk_Extreme
14.9G
usb
USB or memory card
p target: target=/dev/sdb
Clone/extract system from the source
'/dev/sda4'
to the target device (drive) '/dev/sdb'
MODEL      NAME  FSTYPE LABEL      SIZE
FlashBlu   sdb   iso9660 torios-live 7.5G
           sdb1 iso9660 torios-live 729M

/dev/sda4
/dev/sdb
-----
live system or temporary superuser permissions
source=/dev/sda4
target=/dev/sdb
source=/dev/sda4
ls -l /dev/sda4
brw-rw---- 1 root disk 8, 4 Dec 31 05:42 /dev/sd
Cloning a device to a USB drive or memory card .
gpt Zap: done

Installing '/dev/sda4' to '/dev/sdb' ... :

< "/dev/sda4" pv | dd bs=4096 of=/dev/sdb
Please wait for sync until 'Done' is written
(flushing file system buffers to the device)
1.43GiB 0:01:35 [15.3MiB/s] [=====>] 100%
374272+0 records in
374272+0 records out
1533018112 bytes (1.5 GB, 1.4 GiB) copied, 146.745 s, 10.4 MB/s
Syncing the device ...
Done :- )
p_clean:
live system or temporary superuser permissions
live system or temporary superuser permissions
live system or temporary superuser permissions
live system or temporary superuser permissions
clean if necessary and return
clean if necessary and quit
Press Enter to finish mkusb-dus
```

You can make the console window larger, and you can scroll with the *scrollbar* (middle-click and drag), *scroll-wheel* or *two fingers*

Press the Enter key to finish from the console window

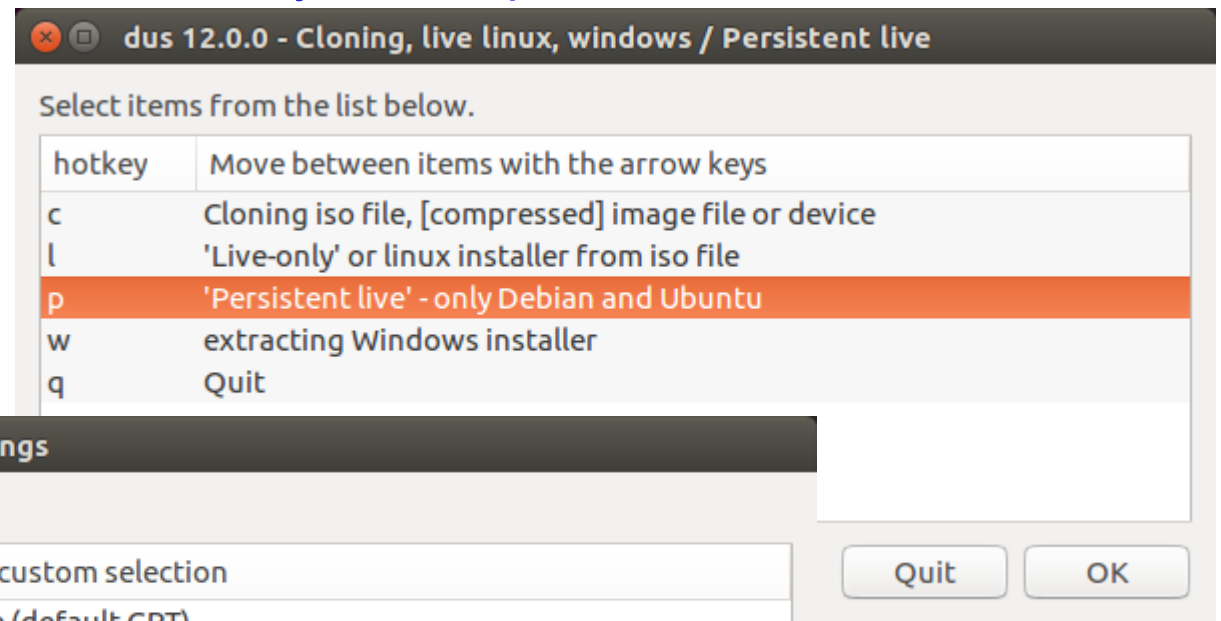




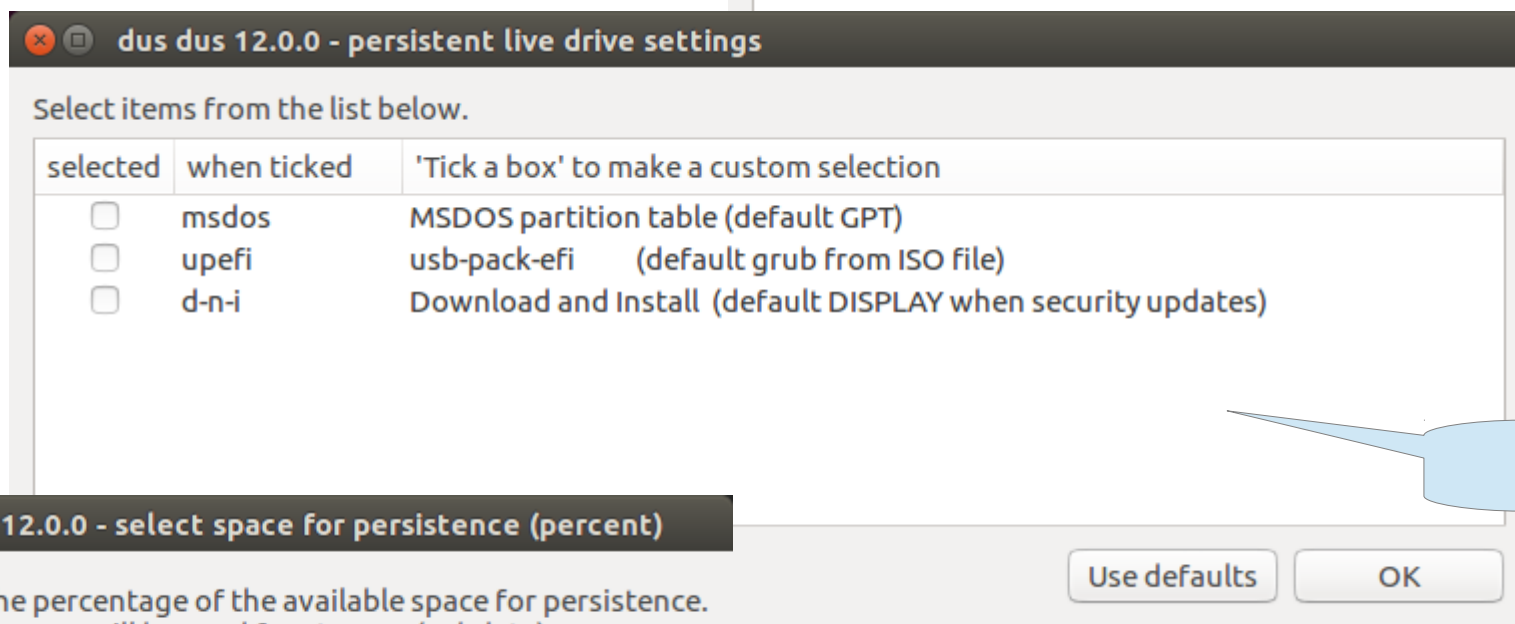
# Persistent live system 1(3)

- See details at <https://help.ubuntu.com/community/mkusb/persistent>

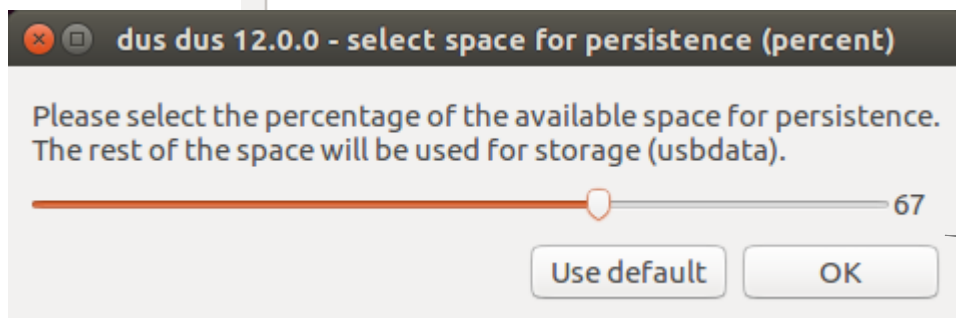
1: select persistent live



2: select settings



3: select space for persistence (percent)





# Persistent live system 2(3)

```
mkusb-dus console - Do USB Stuff
100
218880+0 records in
218880+0 records out
896532480 bytes (897 MB, 855 MiB) copied, 28.1292 s, 31.9 MB/s
Done
do_n_show: Work done
-----
Syncing the target device ...
Wait 5 seconds and a little more ...


```

parted -s "/dev/sdc" print
Model: SanDisk Extreme (scsi)
Disk /dev/sdc: 16.0GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name      Flags
 2      1049kB  2097kB  1049kB   primary      bios_grub
 3      2097kB  130MB   128MB    fat32         primary   boot, esp
 4      130MB   1046MB  916MB    primary
 5      1046MB  11.1GB  10.0GB   ext2          primary
 1      11.1GB  16.0GB  4940MB   ntfs          primary   msftdata

lsblk -o MODEL,NAME,FSTYPE,LABEL,MOUNTPOINT,SIZE "/dev/sdc"
MODEL      NAME     FSTYPE LABEL          MOUNTPOINT  SIZE
Extreme    sdc
|-sdc1 ntfs    usbdata        4.6G
|-sdc2
|-sdc3 vfat     lub1604164     122M
|-sdc4 iso9660 Lubuntu 16.04.1 LTS amd64 874M
|-sdc5 ext4     casper-rw      9.3G

```



```

Done :- )
The target device is ready to use.
'/home/ubuntu/Downloads/lubuntu-16.04.1-desktop-amd64.iso'
was installed
Cleanup after dus-persistent finished :- )
Cleanup after dus-persistent finished :- )
-----
Total time used [by dus-persistent] = 182 s; 00:03:02
p clean:
live system or temporary superuser permissions
clean if necessary and return
clean if necessary and quit
Press Enter to finish mkusb-dus

```


```

**Work done with /dev/sdc :-)**  
The target device is ready to use.  
'/home/ubuntu/Downloads/lubuntu-16.04.1-desktop-amd64.iso'  
was installed

OK

Check for **Done :-)**  
Check the details if you wish.

You can make the console window larger,  
and you can scroll with the  
*scrollbar* (middle-click and drag),  
*scroll-wheel* or *two fingers*





# Persistent live system 3(3)

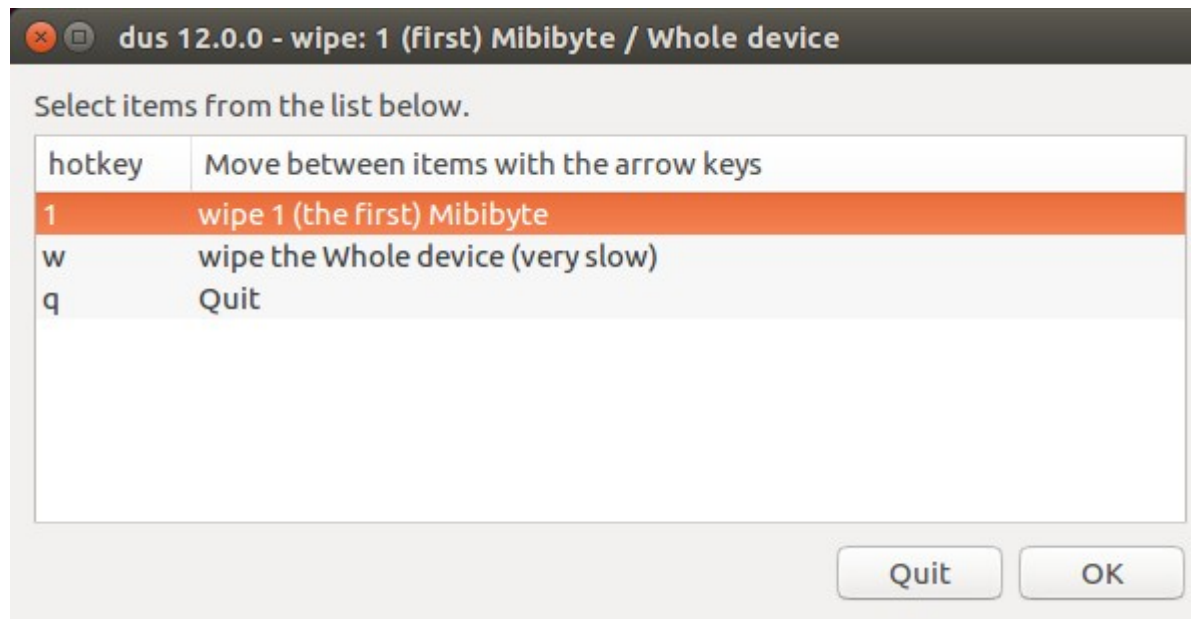
- Advantages
  - works with all current Ubuntu flavour desktop files (Ubuntu, Kubuntu, Lubuntu, ... Xubuntu) and with Linux Mint, ToriOS and several other distros/re-spins based on Ubuntu and Debian Jessie
  - very safe (minimal risk to overwrite the wrong drive by mistake)
  - easy to use
  - the target drive with the persistent live system works in [almost] all PC (Intel/AMD) computers
- Disadvantages (but 'live only' pendrives made with mkusb work in these cases)
  - usb-pack-efi does not work at all in secure mode (UEFI's secure mode), and the boot system based on a 64-bit iso file does not boot in 32-bit computers
  - does not work with linux distros that are not based on Ubuntu (maybe you can tweak the grub.cfg file and make it work)
  - does not work with non-desktop iso files for example the Ubuntu mini.iso or the Ubuntu Server

Remember that most of the time it is enough with a live only USB pendrive and only a waste of effort to create a persistent live system



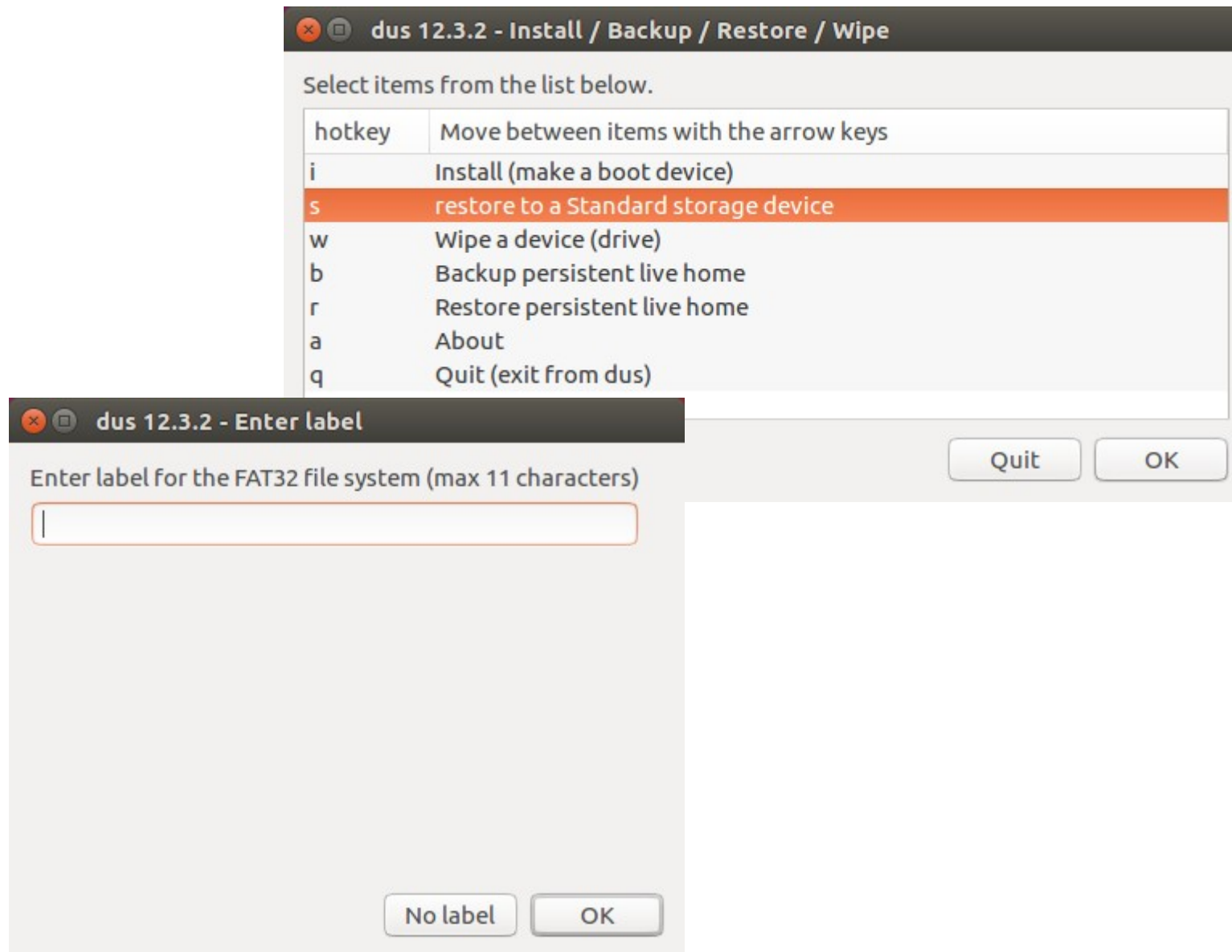
# Wipe the first megabyte (mibibyte)

- If you want to re-use a USB device that has been used with an iso file system, iso9660, you should wipe the first megabyte (actually mibibyte) with dd, overwrite with zeros. Otherwise grub-install and some partitioning tools don't want to write into the head of the drive, because they see the CD file system and are confused.
- **You need *not* wipe the drive before cloning or restoring with mkusb.** It will be done automatically.





# Restore to a standard storage device





# Manage persistent live system

- ***Backup*** and ***restore*** of the /home directory in an Ubuntu casper-rw partition
- ***Upgrade*** persistent live system
  - Restore works to another persistent live drive made from a current daily iso file, and also to another version of Ubuntu
  - So you can upgrade (or downgrade) your persistent live system: use **mkusb** to create a new system from another (typically newer) iso file, and restore from the backup to this other persistent live system.



# Backup persistent live home 1(2)

**dus 12.3.2 - Install / Backup / Restore / Wipe**

Select items from the list below.

hotkey	
i	Install (make a boot device)
s	restore to a Standard storage device
w	Wipe a drive
<b>b</b>	<b>Backup persistent live home</b>
r	Restore persistent live home
a	About
q	Quit (exit from dus)

**Backup to directory/file**

Name:

Home Desktop **Documents** Downloads Music Pictures Videos

casper-rw Ubuntu 16.04.... usbdata Xubuntu... Other Locatio...

**Final checkpoint**

Device: /dev/sdc OS: Xubuntu Core 18.04 - amd64  
File: /home/ubuntu/Documents/mkusb-backup-home.tar.gz  
Action: **backup**

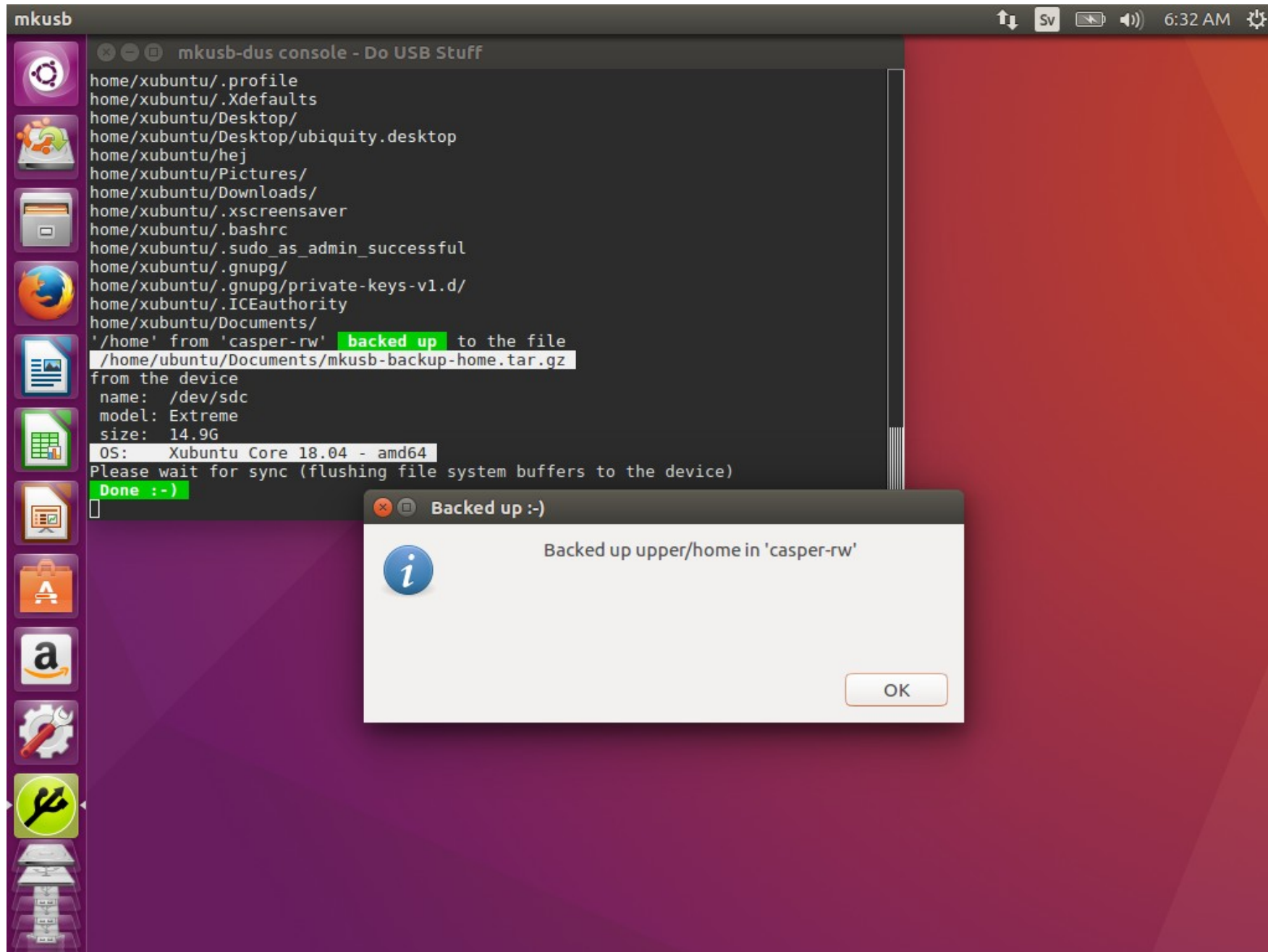
Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/sdc5	11G	86M	9.8G	1%	/tmp/tmp.PTxeBil8xN

Are you sure that you want to continue?

No Yes



# Backup persistent live home 2(2)







# Restore persistent live home 1(2)

**dus 12.3.2 - Install / Backup / Restore / Wipe**

Select items from the list below.

hotkey	Move between items with the
i	Install (make a boot device)
s	restore to a Standard storage device
w	Wipe a drive
b	Backup persistent live home
r	Restore persistent live home
a	About
q	Quit (exit from dus)

**Restore from directory/file**

Recent Home Desktop Documents Downloads

ubuntu Documents

Name	Size	Modified
mkusb-backup-home.tar.gz	73.0 kB	06:31

**Final checkpoint**

Device: /dev/sdc OS: Xubuntu Core 18.04 - amd64  
File: /home/ubuntu/Documents/mkusb-backup-home.tar.gz  
Action: **restore**

Filesystem	Size	Used	Avail	Use%
/dev/sdc5	11G	86M	9.8G	1%

Are you sure that you want to continue?

**Restore /home to casper-rw**

Device: /dev/sdc OS: Xubuntu Core 18.04 - amd64

This 'casper-rw' partition is not clean.

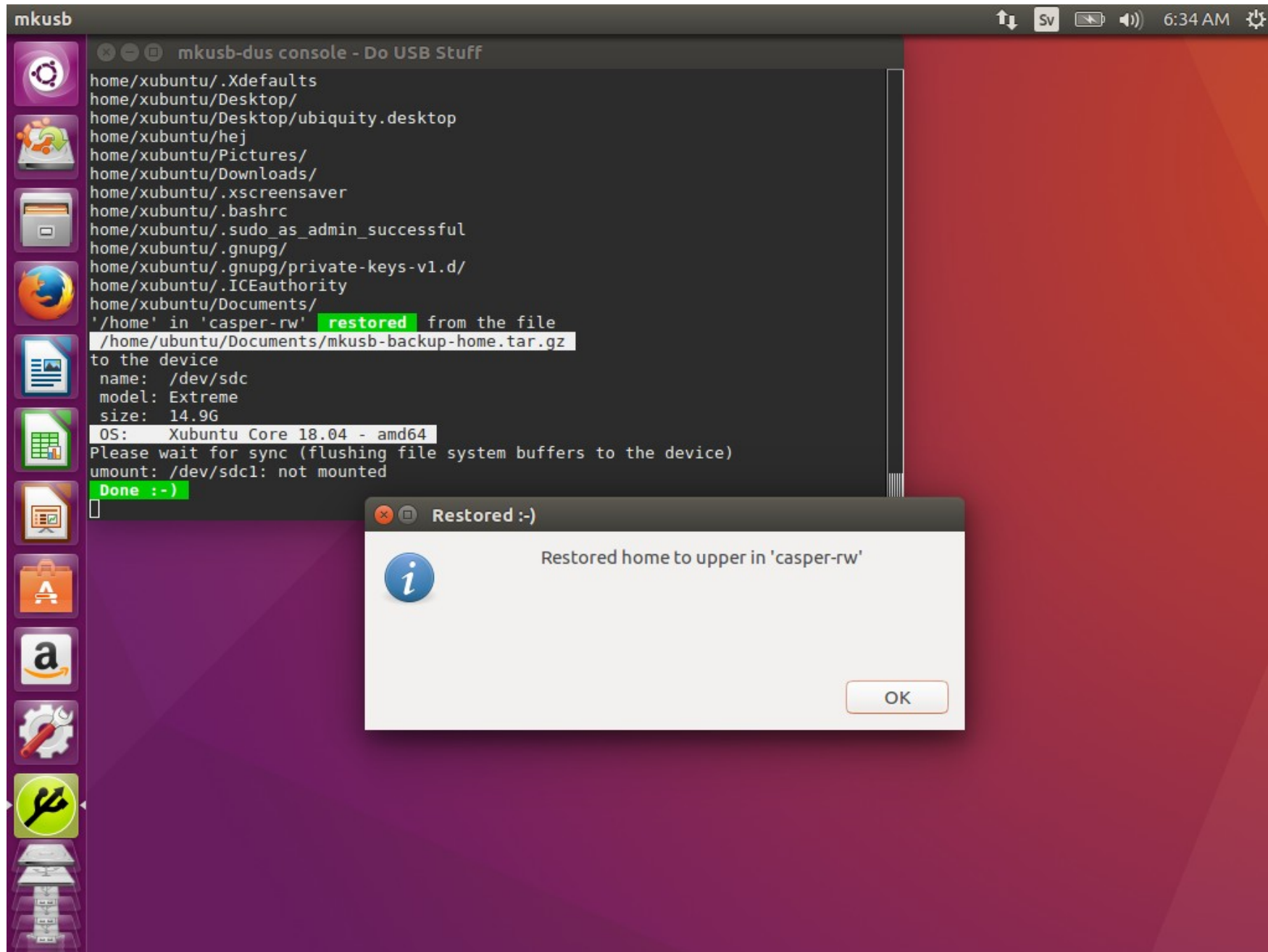
It may work, but chances are better if you create a new persistent live drive or remove all directories and files except 'lost+found' from this one. After that you can restore the home directory.

Do you want to try anyway?

No Yes



# Restore persistent live home 2(2)







# References

- See the tutorials in the Ubuntu Forums and YouTube for more details

[Howto make USB boot drives](#)

[Backup and restore the /home directory in casper-rw partitions of mkusb persistent drives](#)

[YouTube tutorial by ventrical part 1](#)

[YouTube tutorial by ventrical part 2](#)

- alongside the previously mentioned links

<https://help.ubuntu.com/community/mkusb>

<http://phillw.net/isos/linux-tools/mkusb/>

[mkusb-in-ubuntu\\_slideshow.pdf](#)

- And read this wiki page with methods and tools to create USB boot devices/drives/sticks

<https://help.ubuntu.com/community/Installation/FromUSBStick>