# 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, 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

  Start from the menu in many distros
  - 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

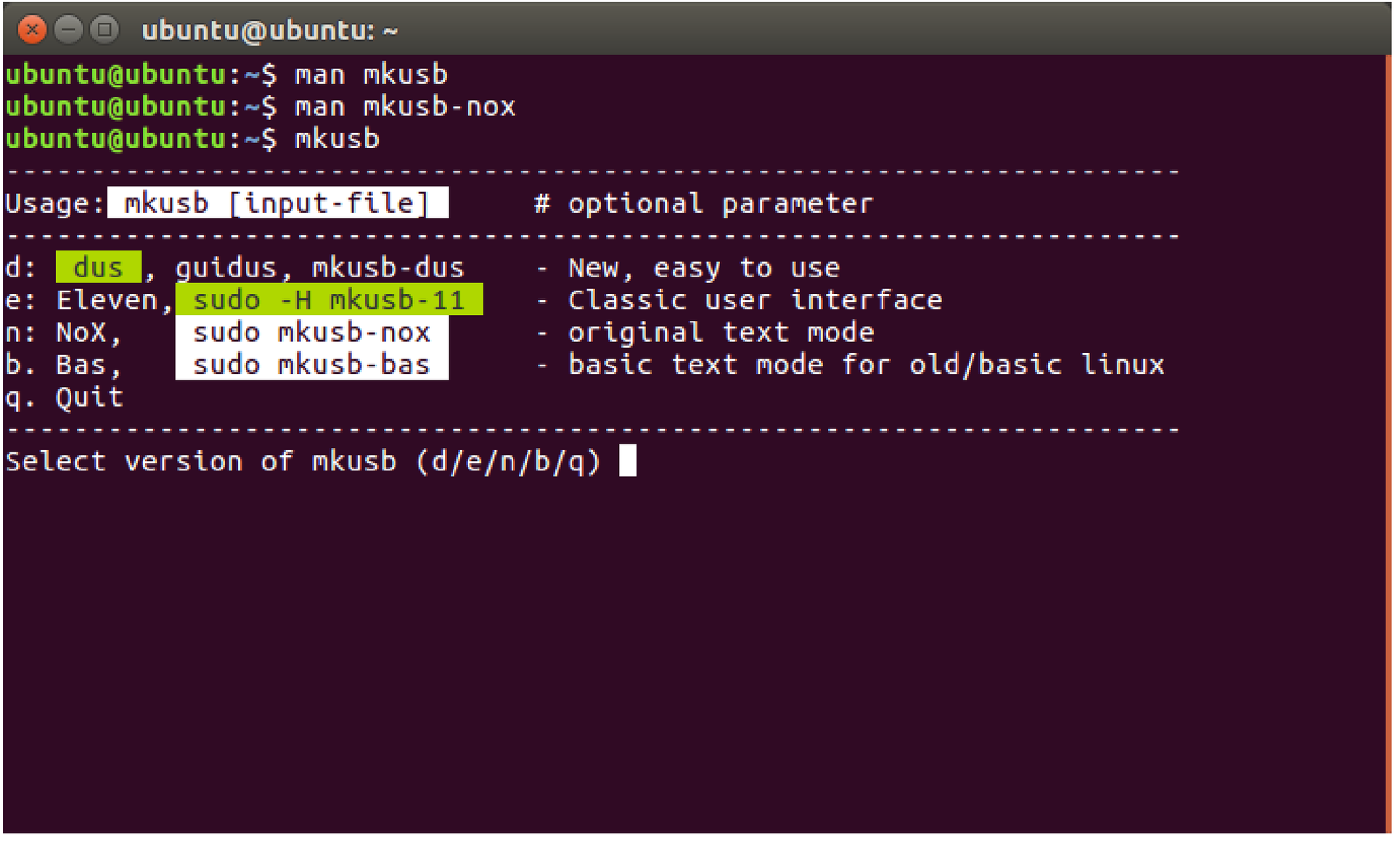
    **`mkusb`** **`#`** or with an input file, for example

    **`mkusb xubuntu-20.04.2-desktop-amd64.iso`**

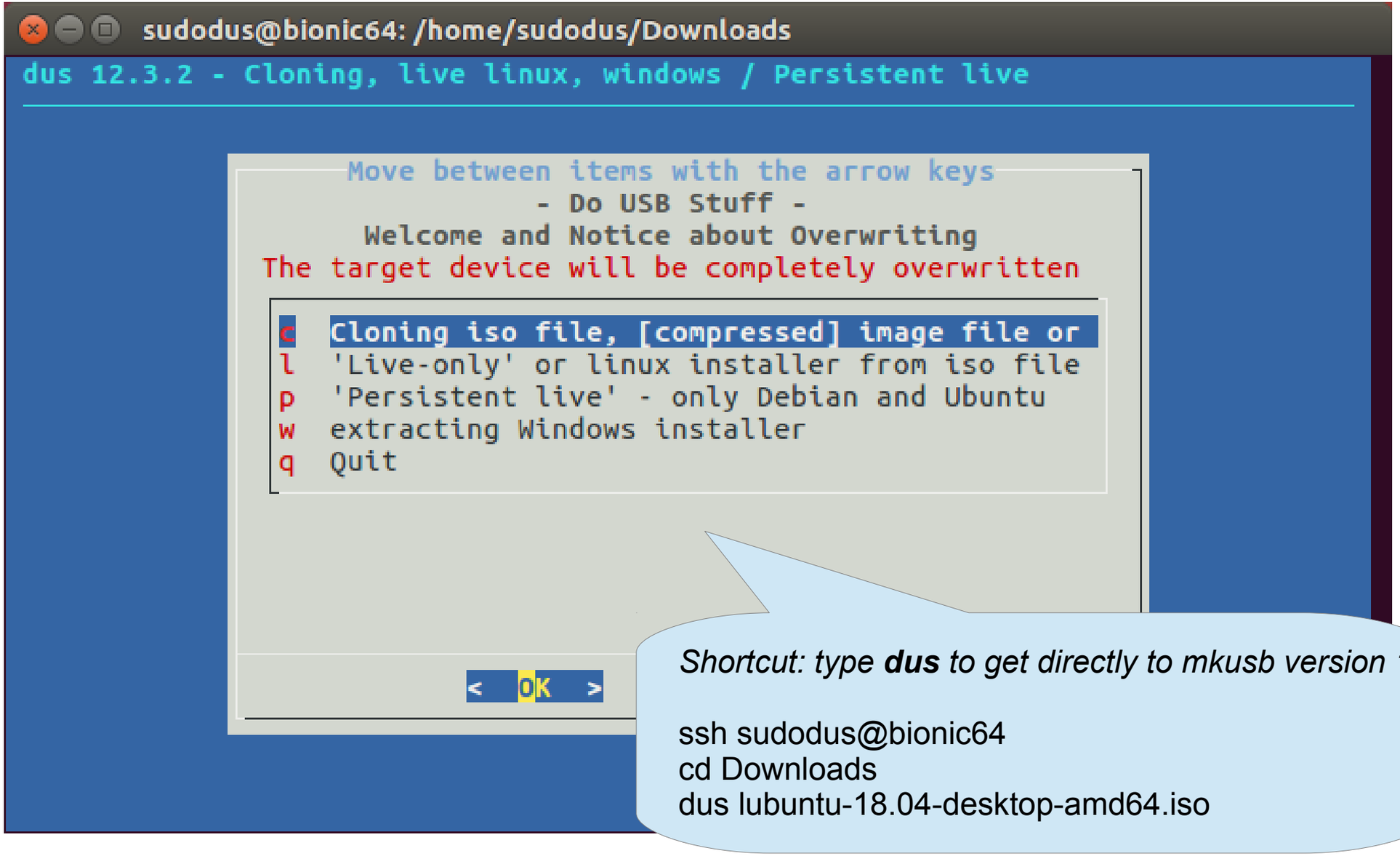
    **`mkusb "path/file.iso"`** # within quotes for special characters
- If downloaded, make **`mkusb`** executable **`sudo chmod ugo+x mkusb`**

# Start mkusb from Activities in Gnome or Dash in Unity

# Start mkusb in a terminal window



# Start mkusb via ssh in text mode




*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

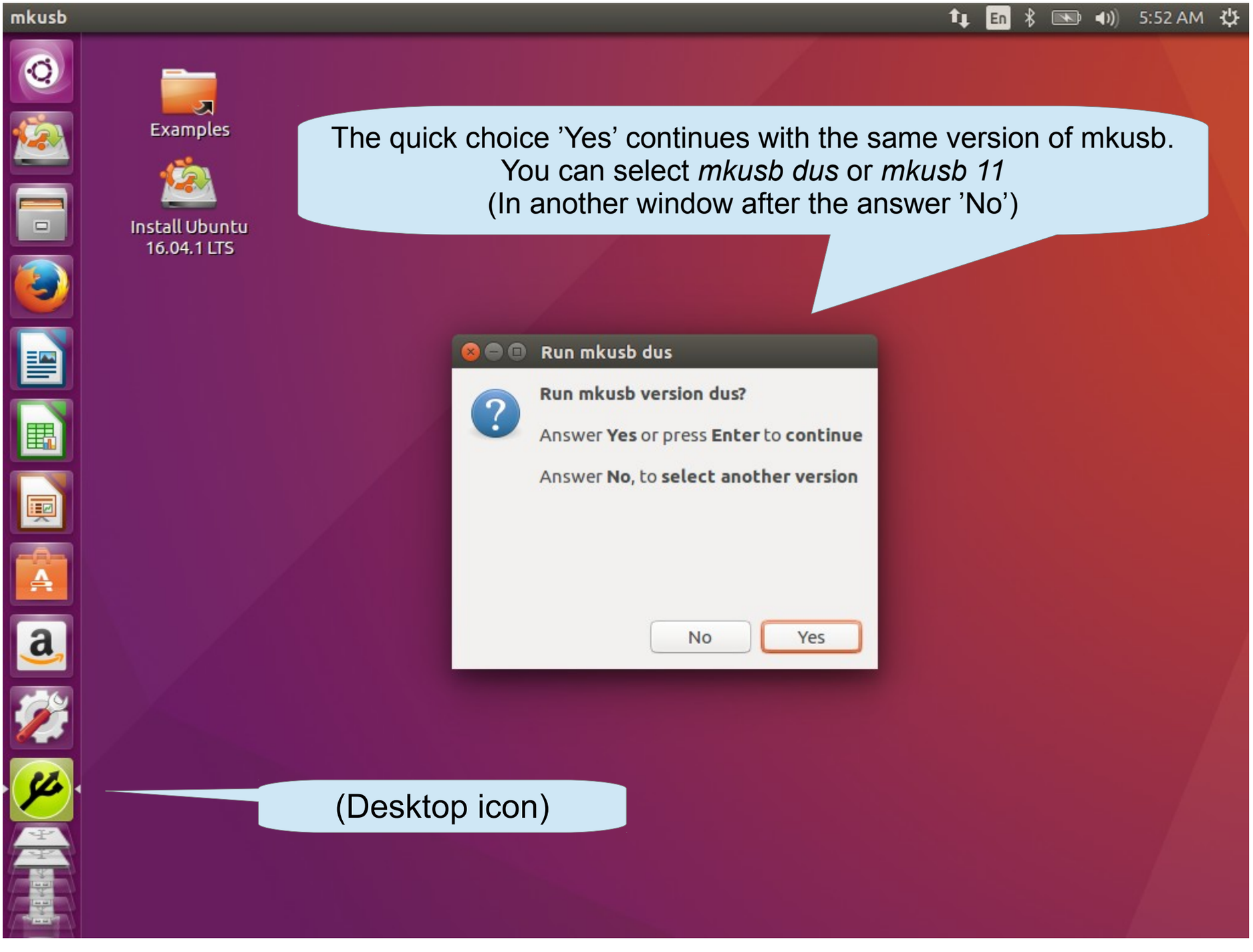
- If you have installed mkusb from the PPA, it will be updated together with other installed programs, and there are manual pages for mkusb and mkusb-nox

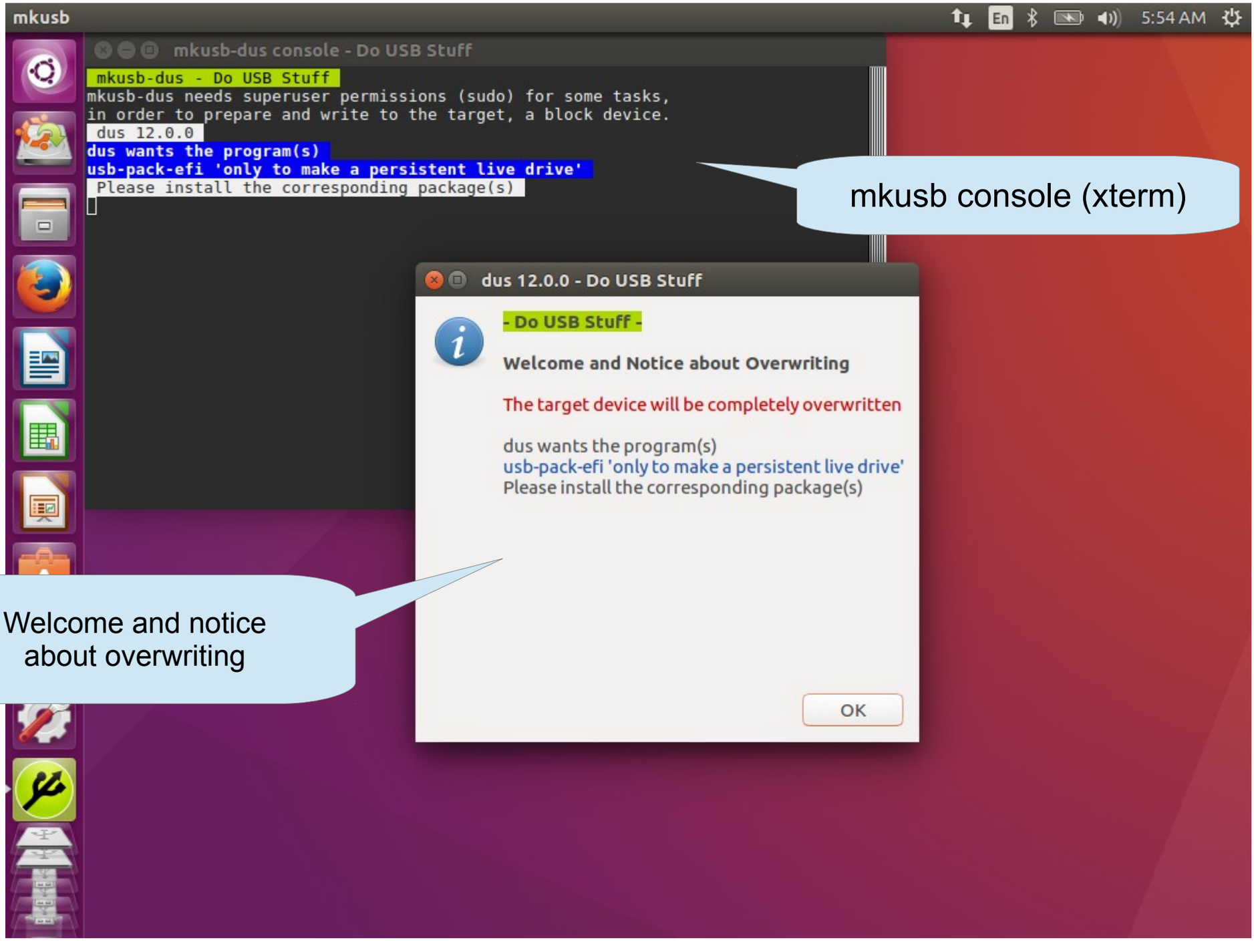
```
man mkusb
man mkusb-nox
```

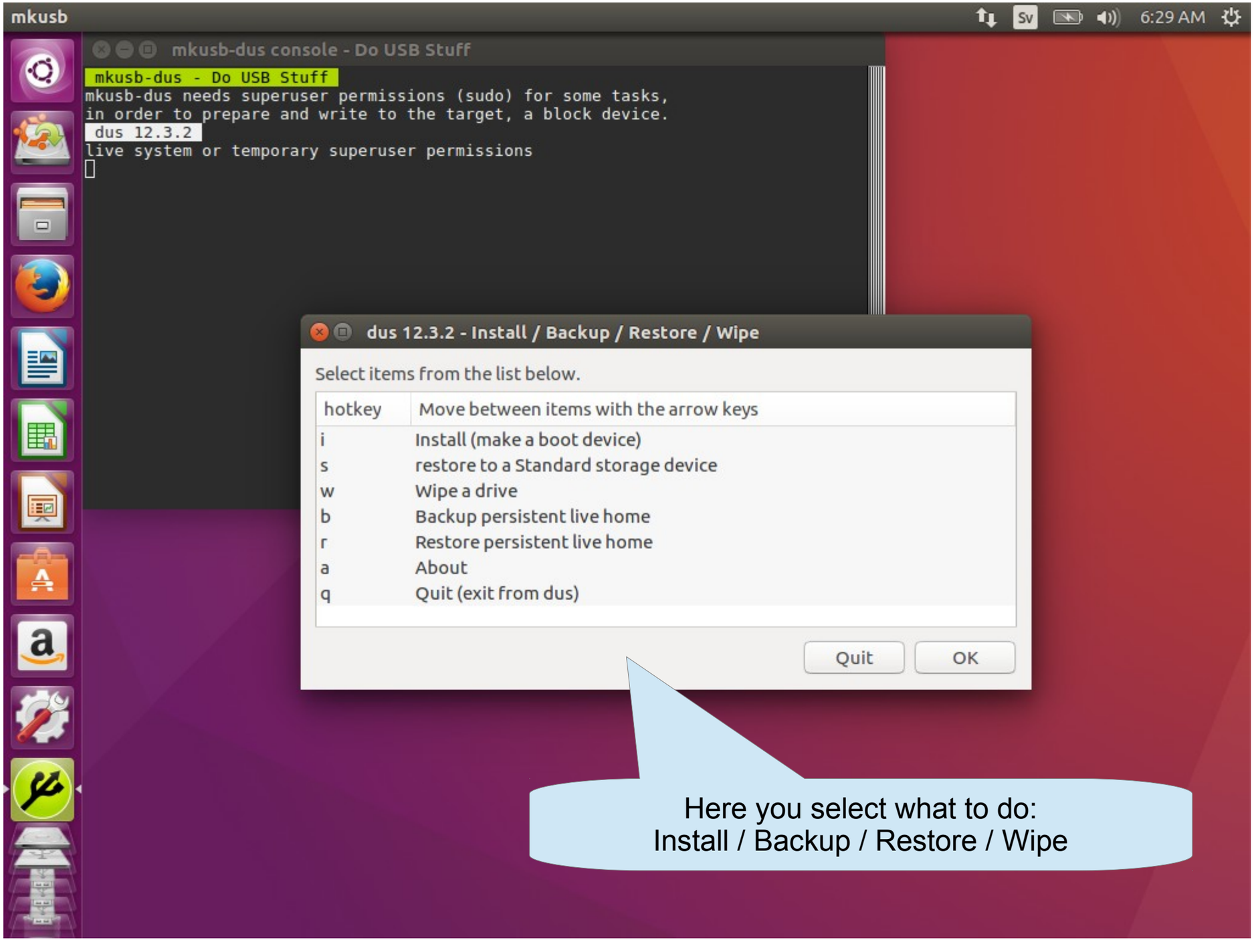
# Slideshow

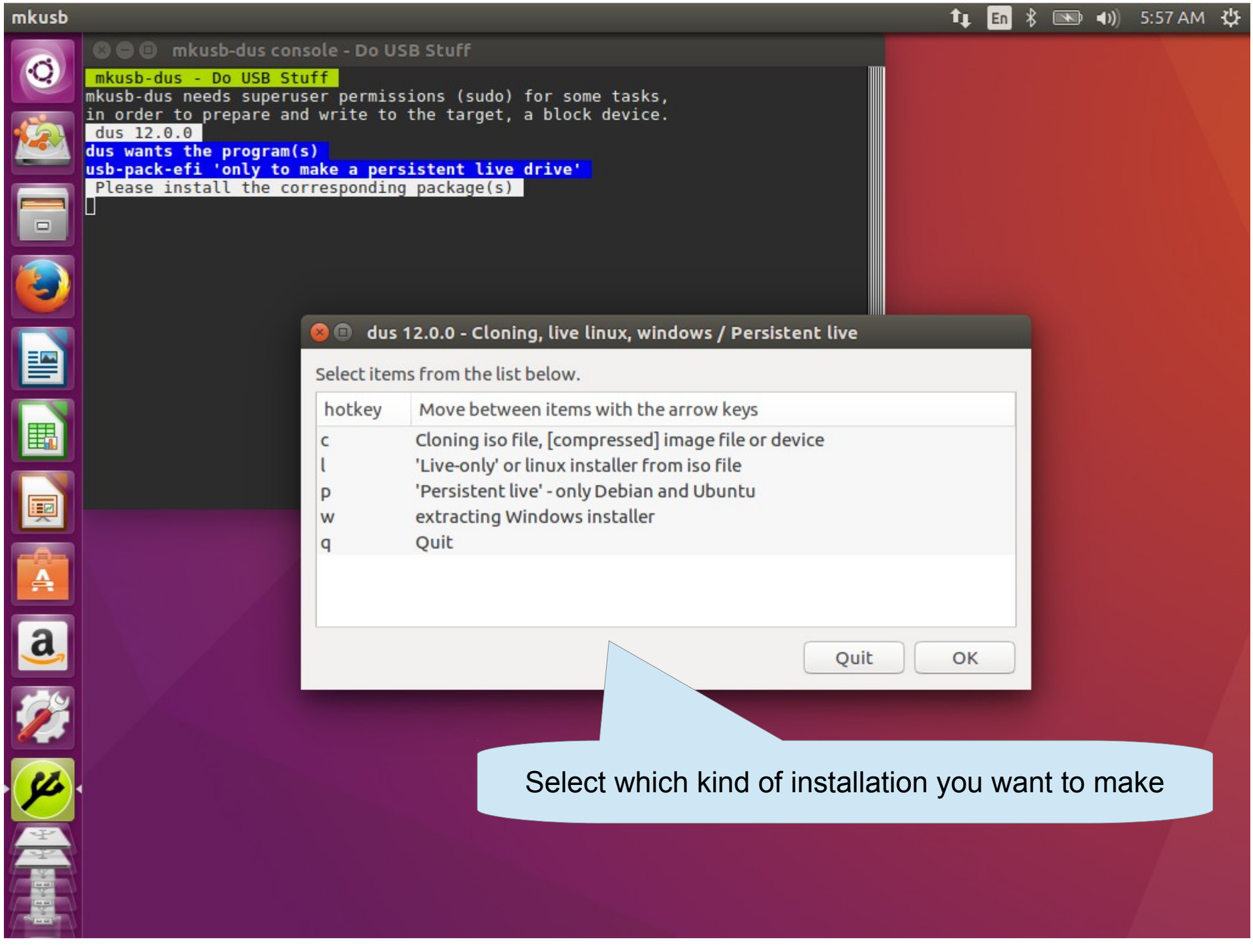
- This manual was made for mkusb version 12 alias dus with the GUI guidus.
- In order to get a view of mkusb version 11, you can watch the following slideshow,

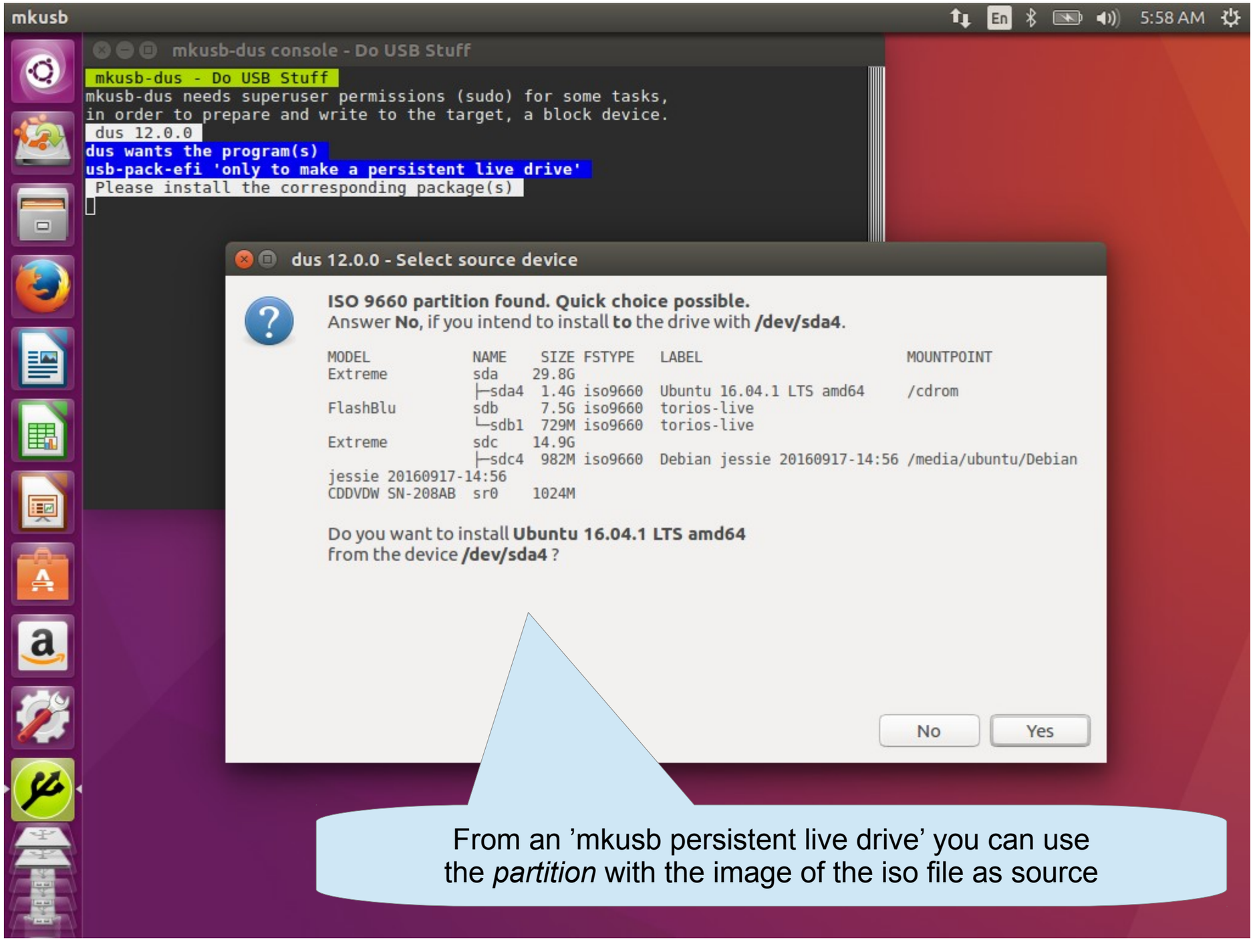
  mkusb-in-ubuntu_slideshow.pdf

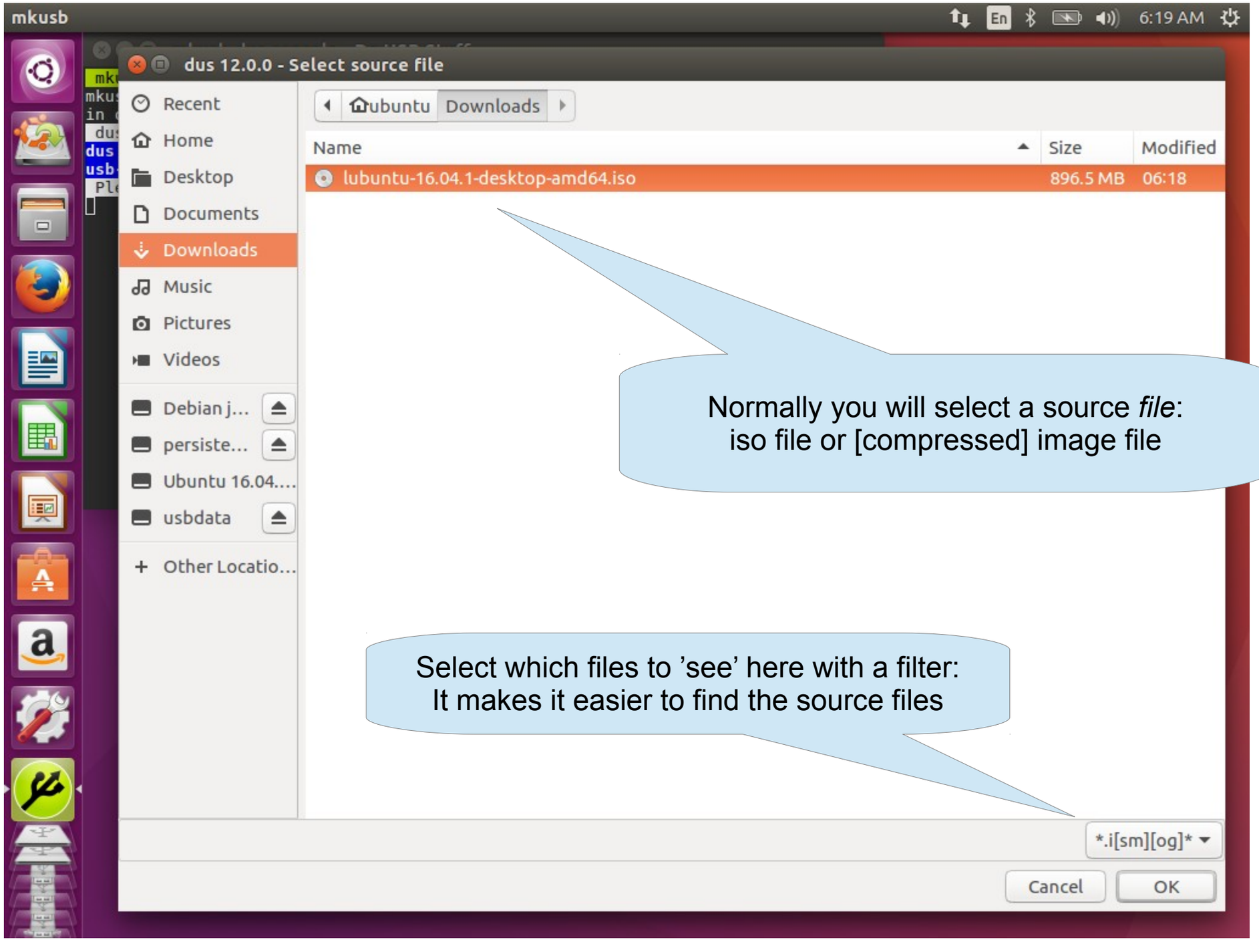

mkusb
En
5:52 AM
Examples
Install Ubuntu 16.04.1 LTS
The quick choice 'Yes' continues with the same version of mkusb.
You can select *mkusb dus* or *mkusb 11*
(In another window after the answer 'No')
Run mkusb dus
Run mkusb version dus?
Answer Yes or press Enter to continue
Answer No, to select another version
No
Yes
(Desktop icon)

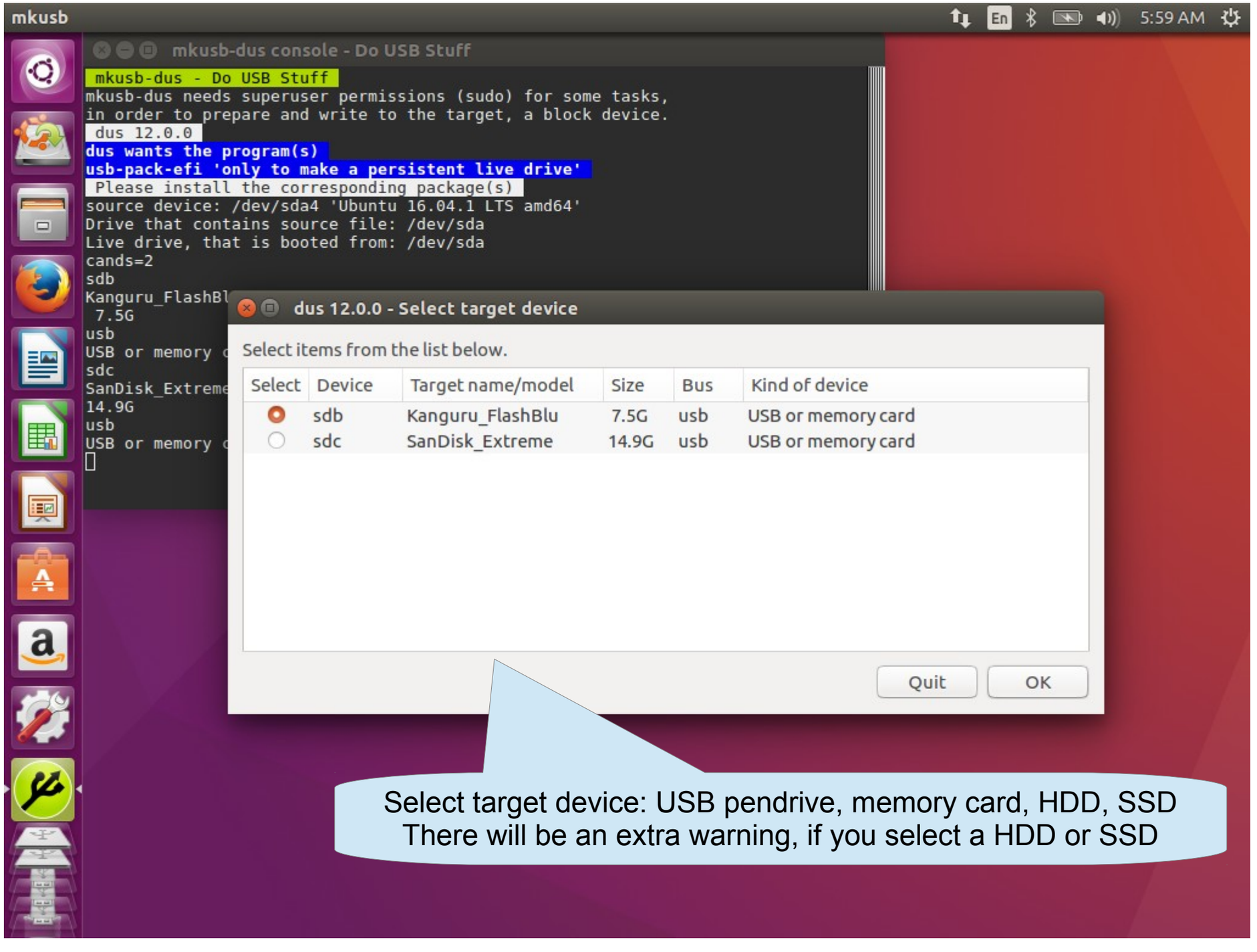

mkusb
5:54 AM
mkusb-dus console - Do USB Stuff
mkusb-dus - Do USB Stuff
mkusb-dus needs superuser permissions (sudo) for some tasks,
in order to prepare and write to the target, a block device.
dus 12.0.0
dus wants the program(s)
usb-pack-efi 'only to make a persistent live drive'
Please install the corresponding package(s)
mkusb console (xterm)
dus 12.0.0 - Do USB Stuff
- Do USB Stuff -
Welcome and Notice about Overwriting
The target device will be completely overwritten
dus wants the program(s)
usb-pack-efi 'only to make a persistent live drive'
Please install the corresponding package(s)
OK
Welcome and notice about overwriting

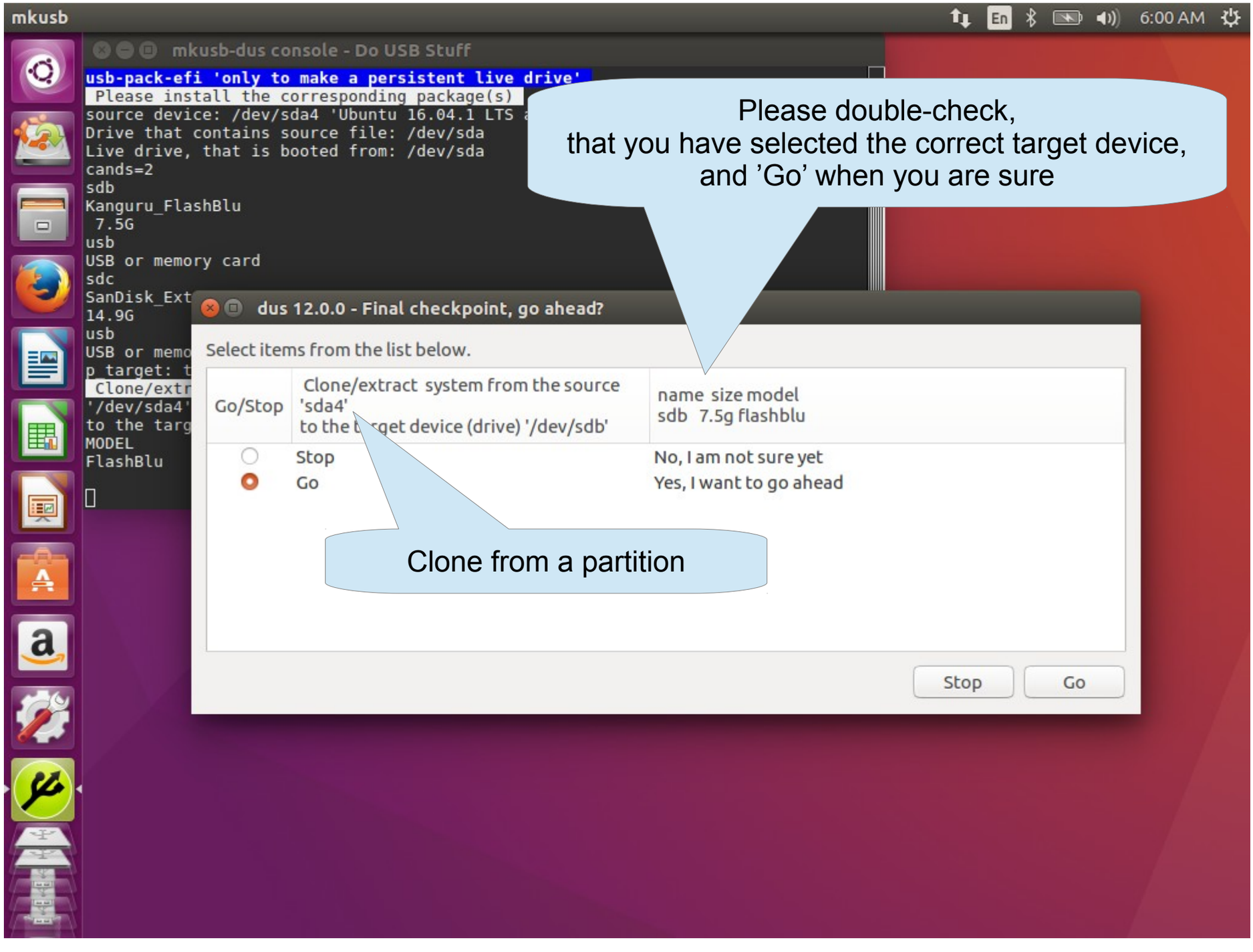

mkusb
6:29 AM
mkusb-dus console - Do USB Stuff
mkusb-dus - Do USB Stuff
mkusb-dus needs superuser permissions (sudo) for some tasks,
in order to prepare and write to the target, a block device.
dus 12.3.2
live system or temporary superuser permissions
dus 12.3.2 - Install / Backup / Restore / Wipe
Select items from the list below.
hotkey
Move between items with the arrow keys
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)
Quit
OK
Here you select what to do:
Install / Backup / Restore / Wipe

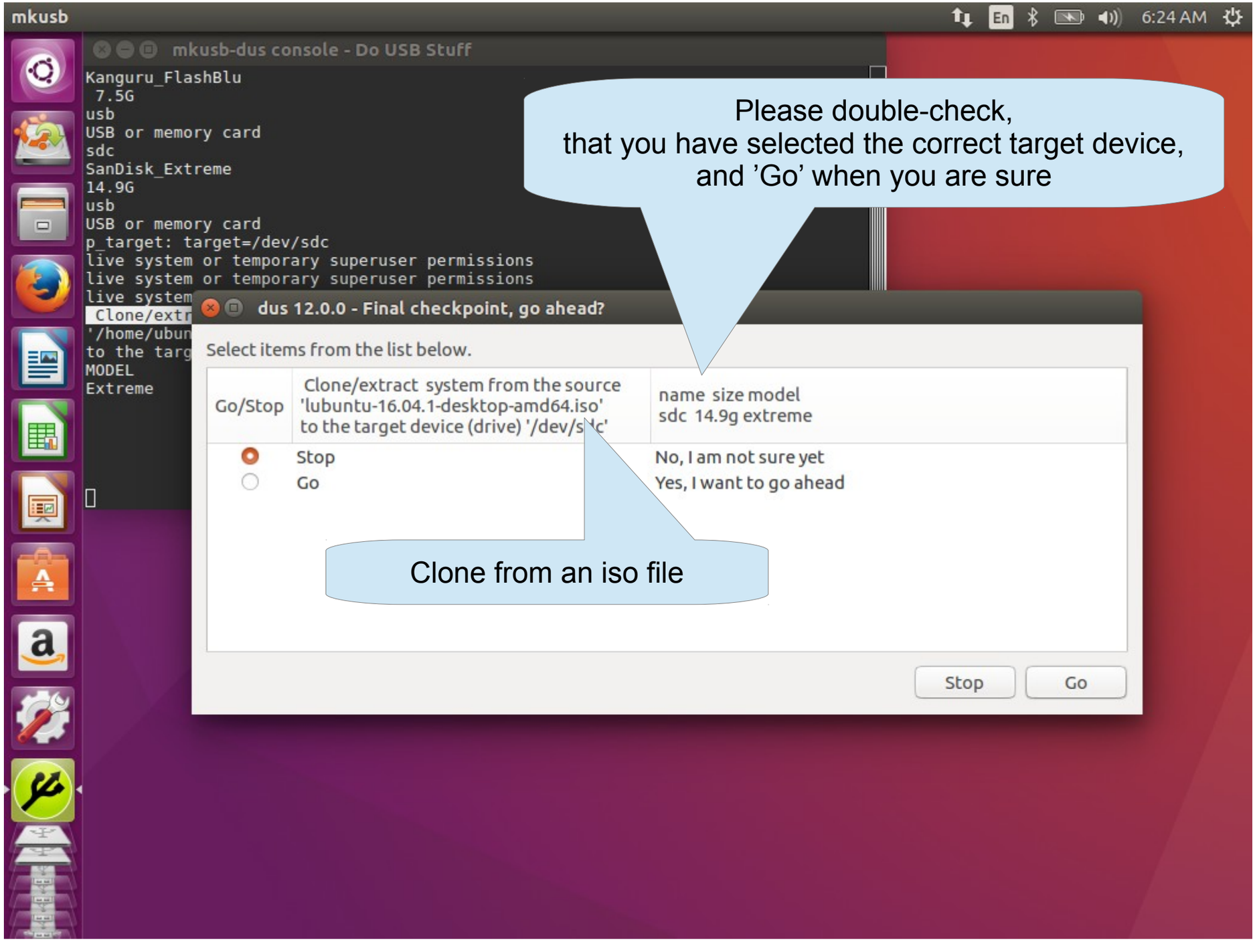

mkusb
En
5:57 AM
mkusb-dus console - Do USB Stuff
mkusb-dus - Do USB Stuff
mkusb-dus needs superuser permissions (sudo) for some tasks,
in order to prepare and write to the target, a block device.
dus 12.0.0
dus wants the program(s)
usb-pack-efi 'only to make a persistent live drive'
Please install the corresponding package(s)
dus 12.0.0 - Cloning, live linux, windows / Persistent live
Select items from the list below.
hotkey
Move between items with the arrow keys
c
Cloning iso file, [compressed] image file or device
l
'Live-only' or linux installer from iso file
p
'Persistent live' - only Debian and Ubuntu
w
extracting Windows installer
q
Quit
Quit
OK
Select which kind of installation you want to make

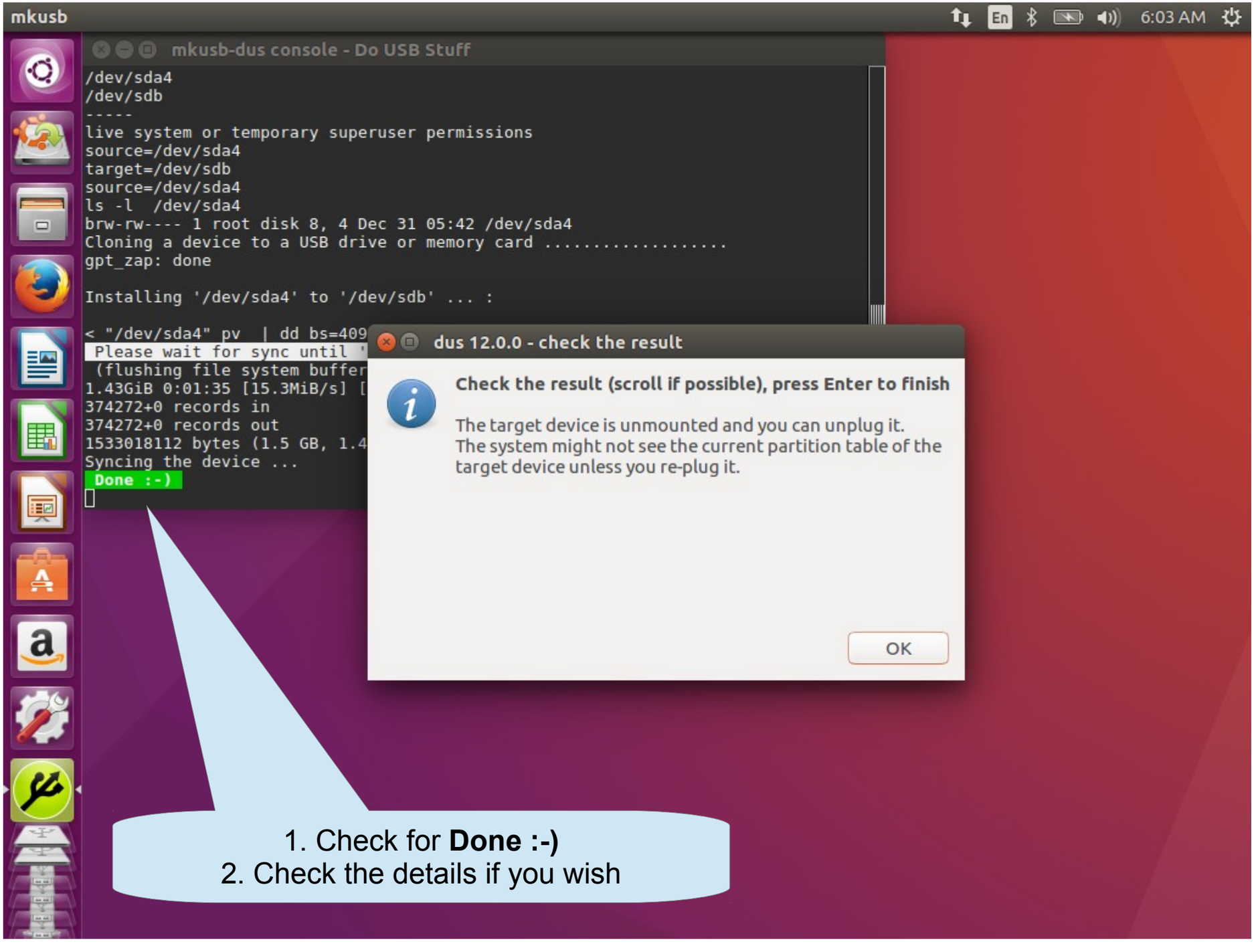

mkusb
5:58 AM
mkusb-dus console - Do USB Stuff
mkusb-dus - Do USB Stuff
mkusb-dus needs superuser permissions (sudo) for some tasks,
in order to prepare and write to the target, a block device.
dus 12.0.0
dus wants the program(s)
usb-pack-efi 'only to make a persistent live drive'
Please install the 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 MOUNTPOINT
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 sdc 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

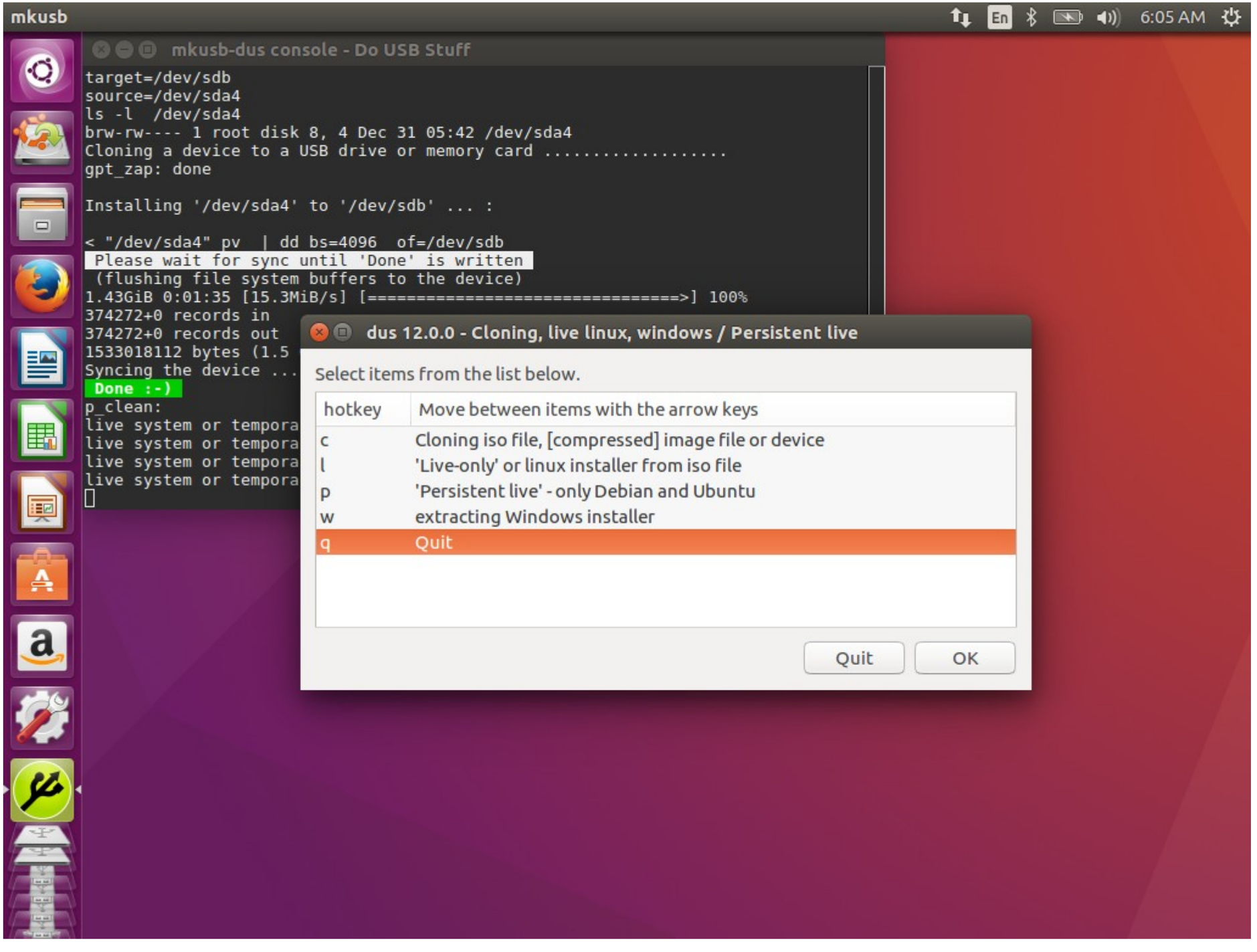

mkusb
6:19 AM
dus 12.0.0 - Select source file
Recent
Home
Desktop
Documents
Downloads
Music
Pictures
Videos
Debian j...
persiste...
Ubuntu 16.04....
usbdata
Other Locatio...
ubuntu
Downloads
Name
Size
Modified
lubuntu-16.04.1-desktop-amd64.iso
896.5 MB
06:18
Normally you will select a source *file*:
iso file or [compressed] image file
Select which files to 'see' here with a filter:
It makes it easier to find the source files
*.i[sm][og]*
Cancel
OK

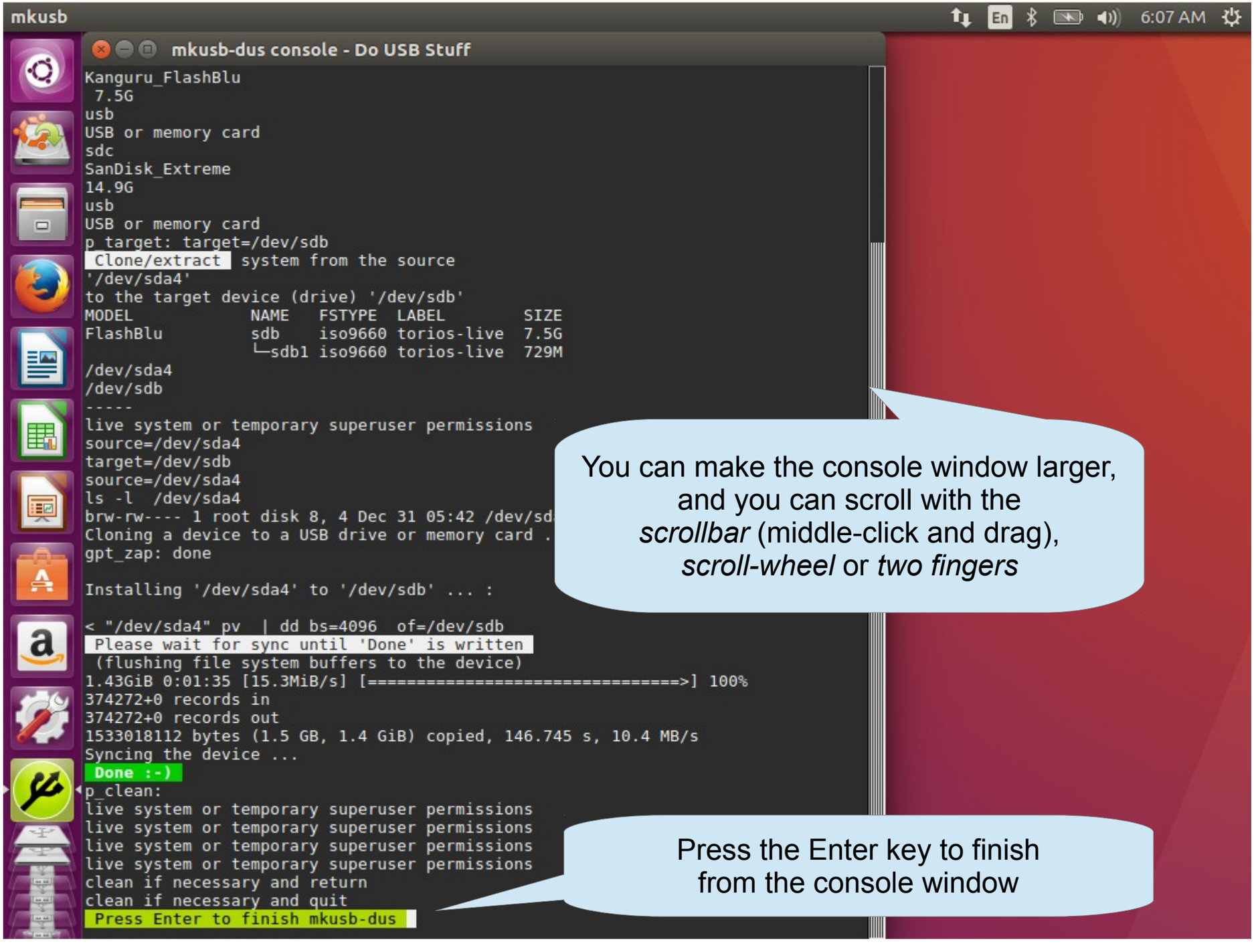

mkusb
5:59 AM
mkusb-dus console - Do USB Stuff
mkusb-dus - Do USB Stuff
mkusb-dus needs superuser permissions (sudo) for some tasks,
in order to prepare and write to the target, a block device.
dus 12.0.0
dus wants the program(s)
usb-pack-efi 'only to make a persistent live drive'
Please install the corresponding package(s)
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
7.5G
usb
USB or memory
sdc
SanDisk_Extreme
14.9G
usb
USB or memory
dus 12.0.0 - Select target device
Select items from the list below.
Select
Device
Target name/model
Size
Bus
Kind of device
sdb
Kanguru_FlashBlu
7.5G
usb
USB or memory card
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
6:00 AM
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
Please double-check,
that you have selected the correct target device,
and 'Go' when you are sure
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
Stop
No, I am not sure yet
Go
Yes, I want to go ahead
Clone from a partition
Stop
Go


mkusb
En
6:24 AM
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/extr
'/home/ubun
to the targ
MODEL
Extreme
Please double-check,
that you have selected the correct target device,
and 'Go' when you are sure
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
sdc 14.9g extreme
Stop
No, I am not sure yet
Go
Yes, I want to go ahead
Clone from an iso file
Stop
Go

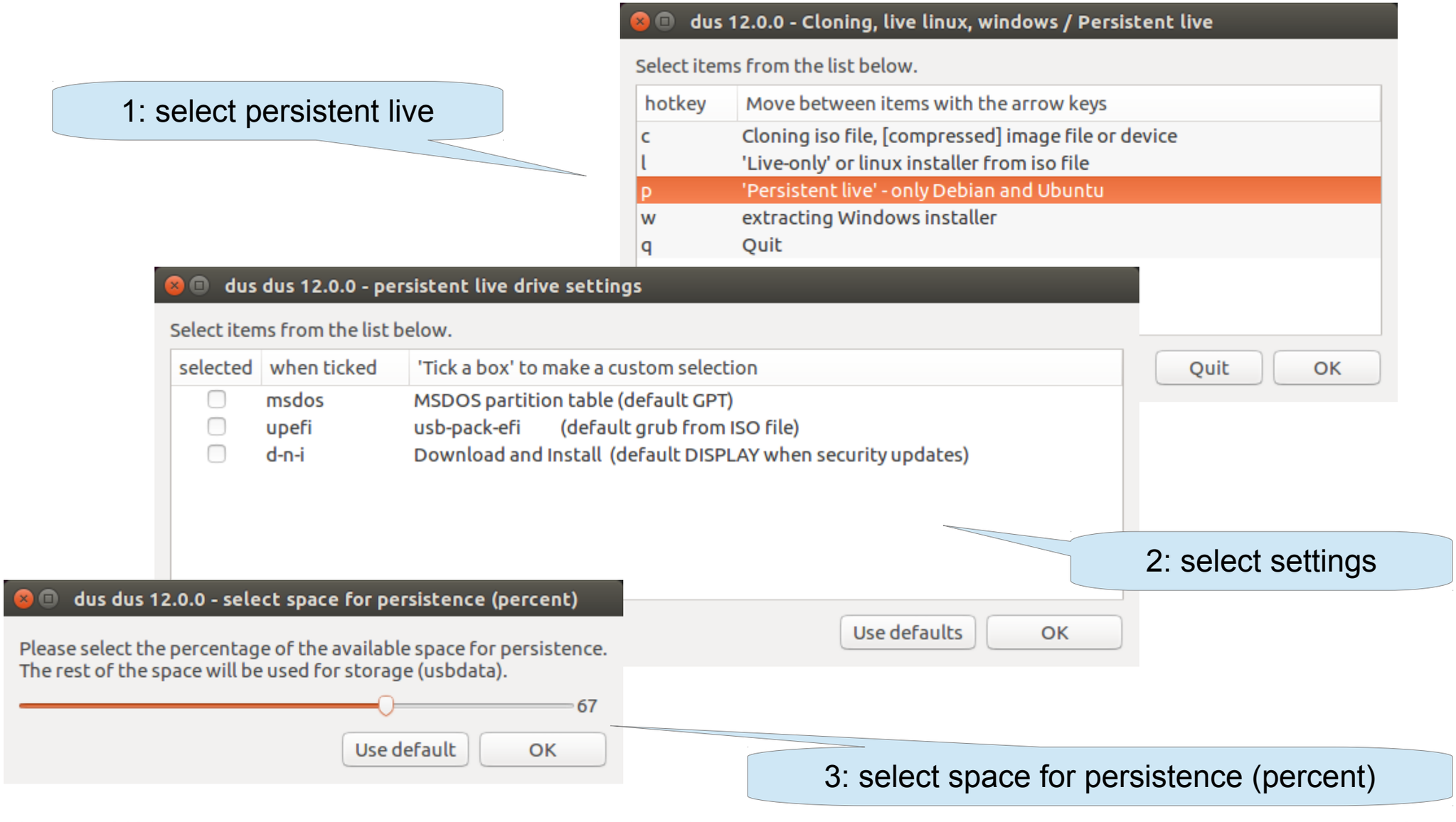

mkusb
6:03 AM
mkusb-dus console - Do USB Stuff
/dev/sda4
/dev/sdb
-----
live system or temporary superuser permissions
source=/dev/sda4
target=/dev/sdb
source=/dev/sda4
ls -l /dev/sda4
brw-rw---- 1 root disk 8, 4 Dec 31 05:42 /dev/sda4
Cloning a device to a USB drive or memory card ...................
gpt_zap: done
Installing '/dev/sda4' to '/dev/sdb' ... :
< "/dev/sda4" pv | dd bs=409
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 :-)
dus 12.0.0 - check the result
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
1. Check for Done :-)
2. Check the details if you wish


mkusb
En
6:05 AM
mkusb-dus console - Do USB Stuff
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 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
Syncing the device ...
Done :-)
p_clean:
live system or tempora
live system or tempora
live system or tempora
live system or tempora
dus 12.0.0 - Cloning, live linux, windows / Persistent live
Select items from the list below.
hotkey
Move between items with the arrow keys
c
Cloning iso file, [compressed] image file or device
l
'Live-only' or linux installer from iso file
p
'Persistent live' - only Debian and Ubuntu
w
extracting Windows installer
q
Quit
Quit
OK

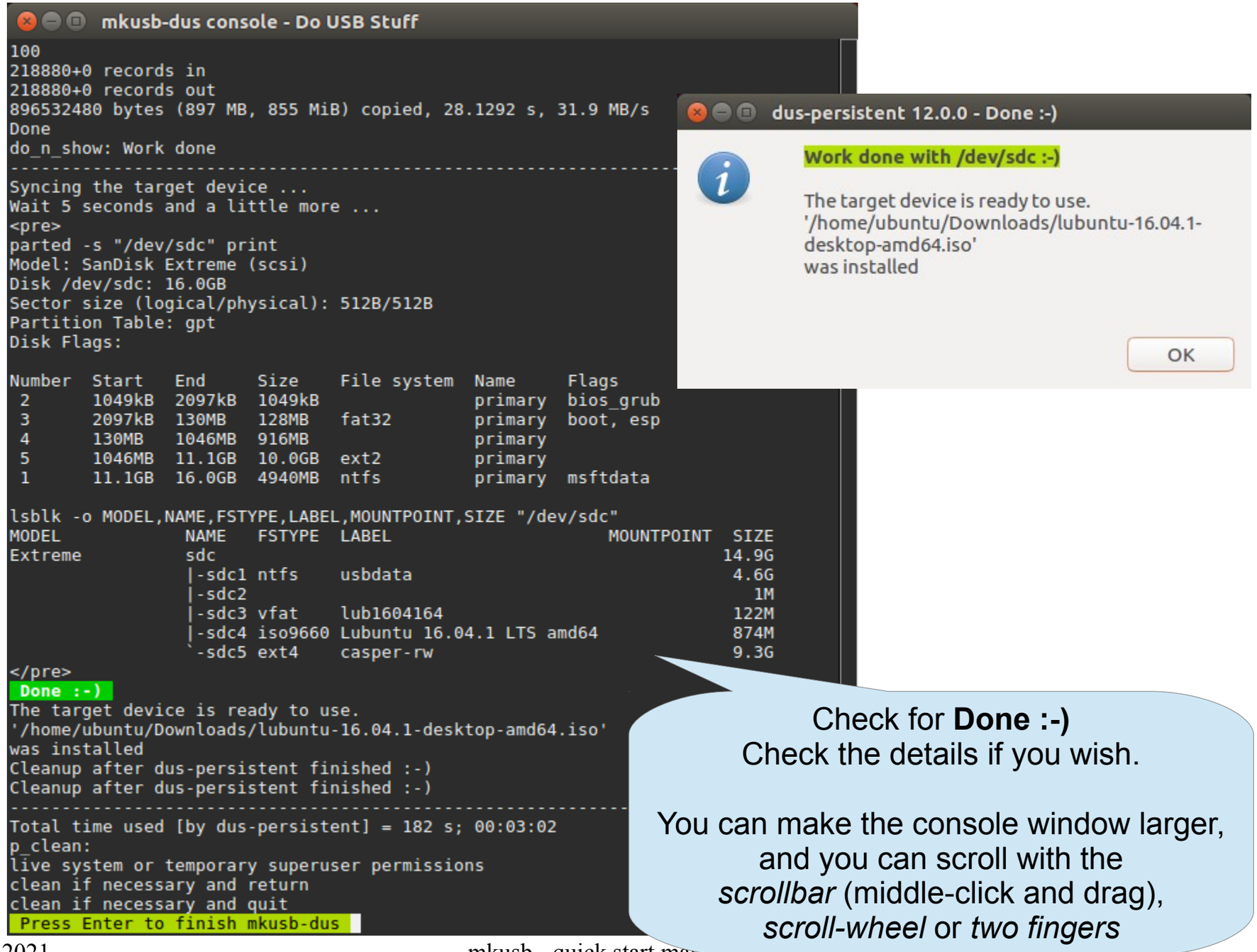

mkusb
6:07 AM
mkusb-dus console - Do USB Stuff
Kanguru_FlashBlu
7.5G
usb
USB or memory card
sdc
SanDisk_Extreme
14.9G
usb
USB or memory card
p_target: target=/dev/sdb
Clone/extract system from the source
'/dev/sda4'
to the target device (drive) '/dev/sdb'
MODEL NAME FSTYPE LABEL SIZE
FlashBlu sdb iso9660 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



# Persistent live system 2(3)



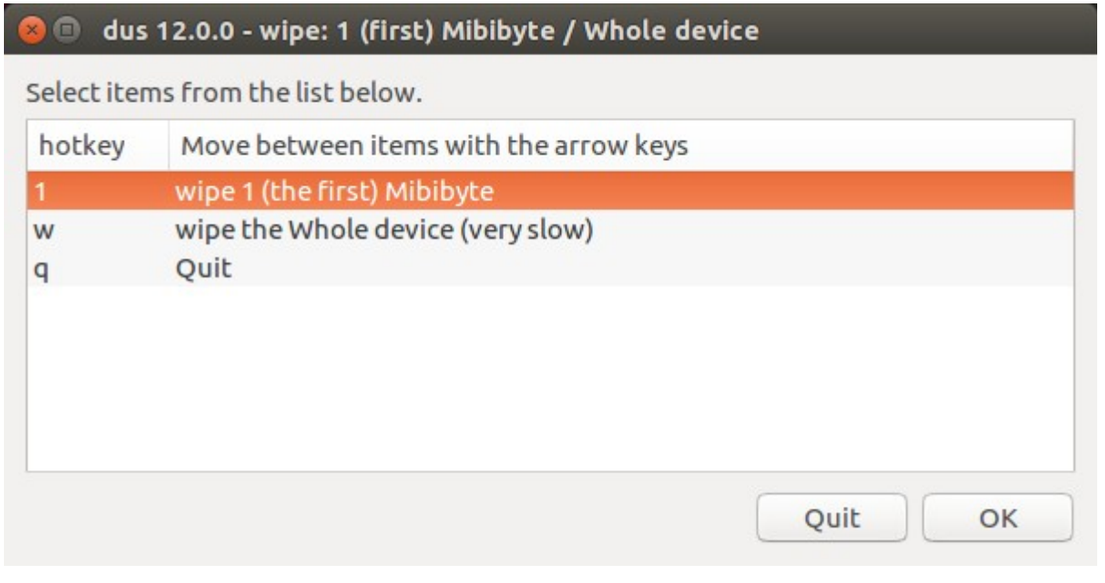
# Persistent live system 3(3)

- 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

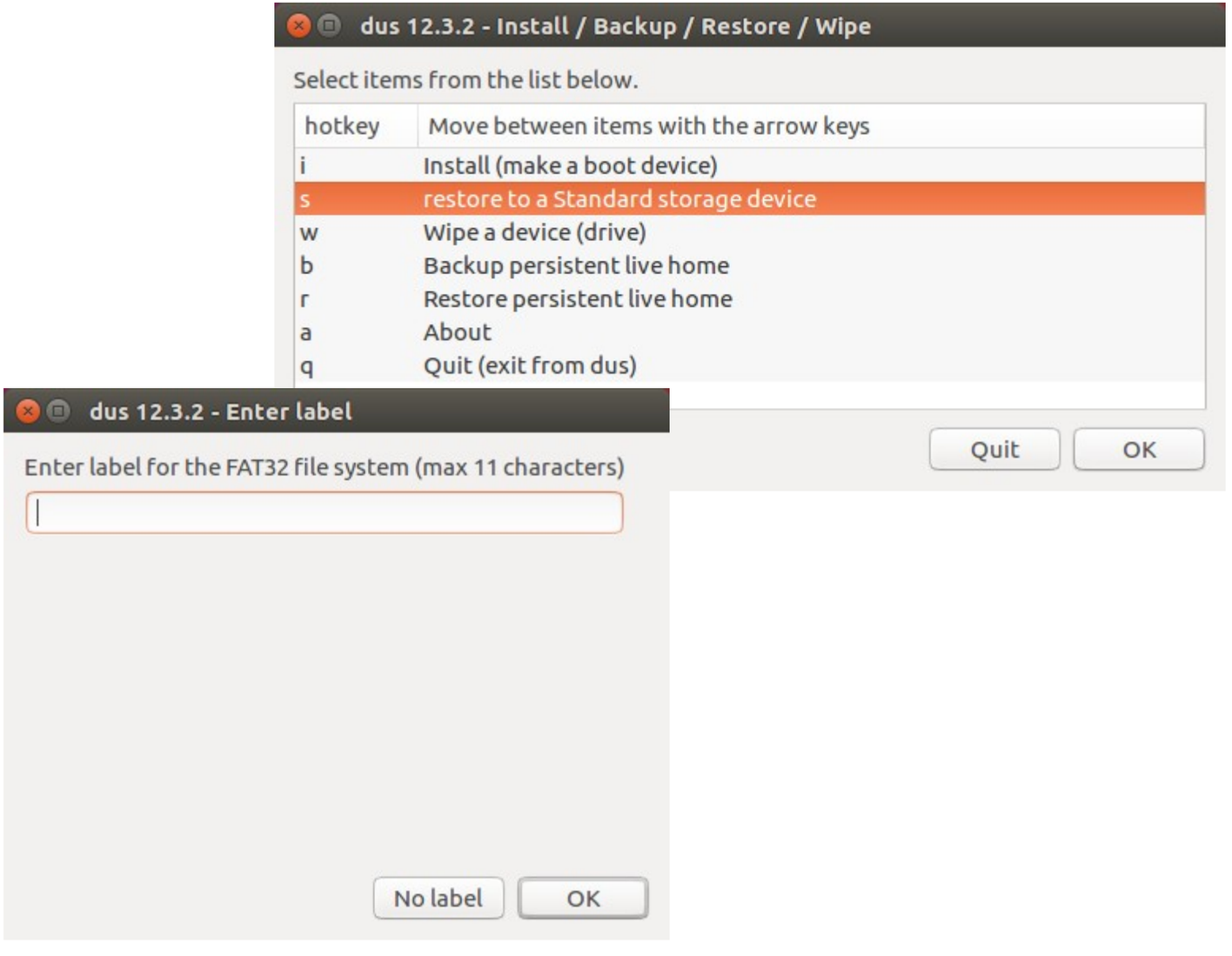
Remember that most of the time it is enough with a live only USB pendrive and only a waste of effort to create a persistent live system

# 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.



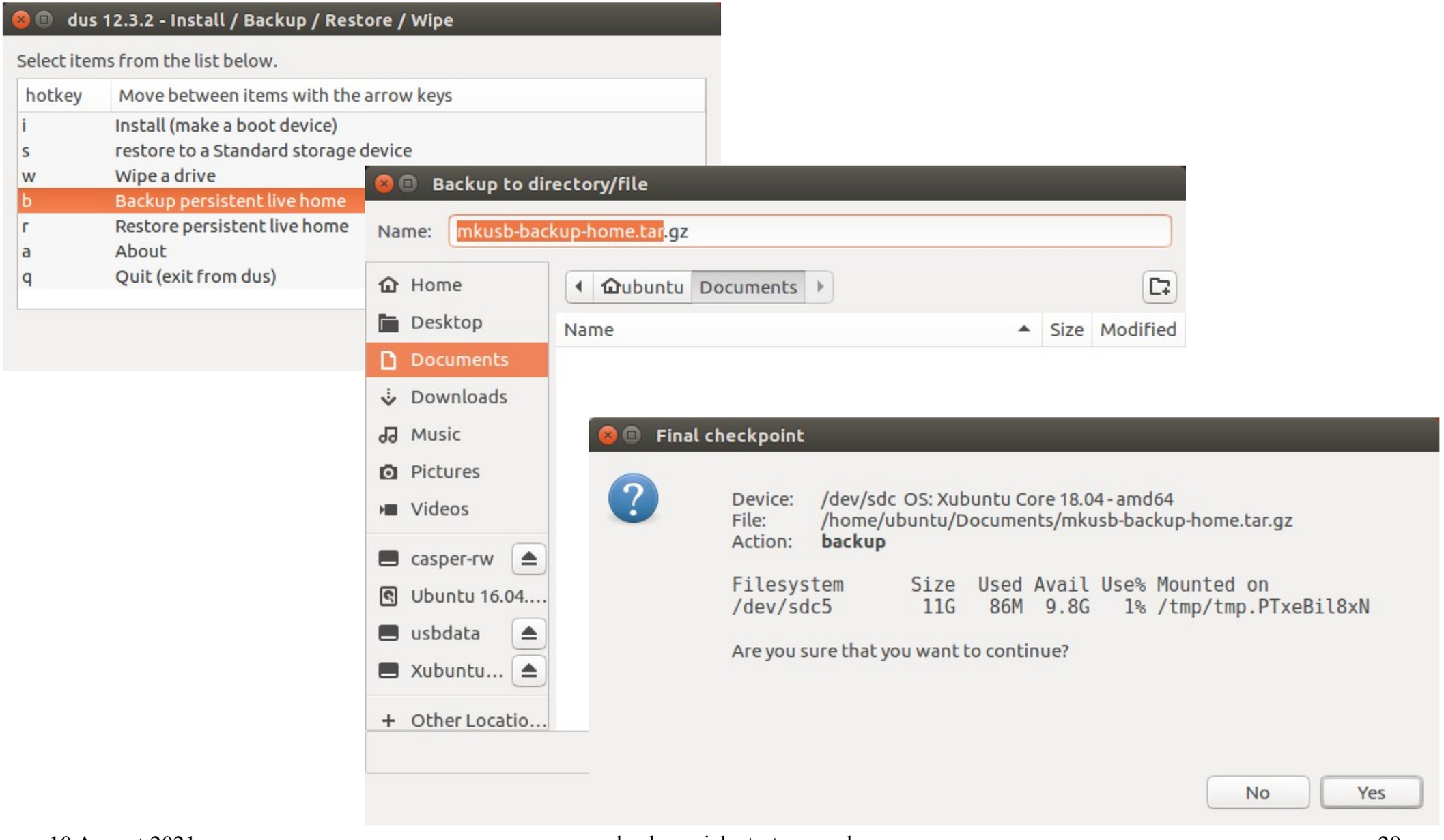
# Restore to a standard storage device



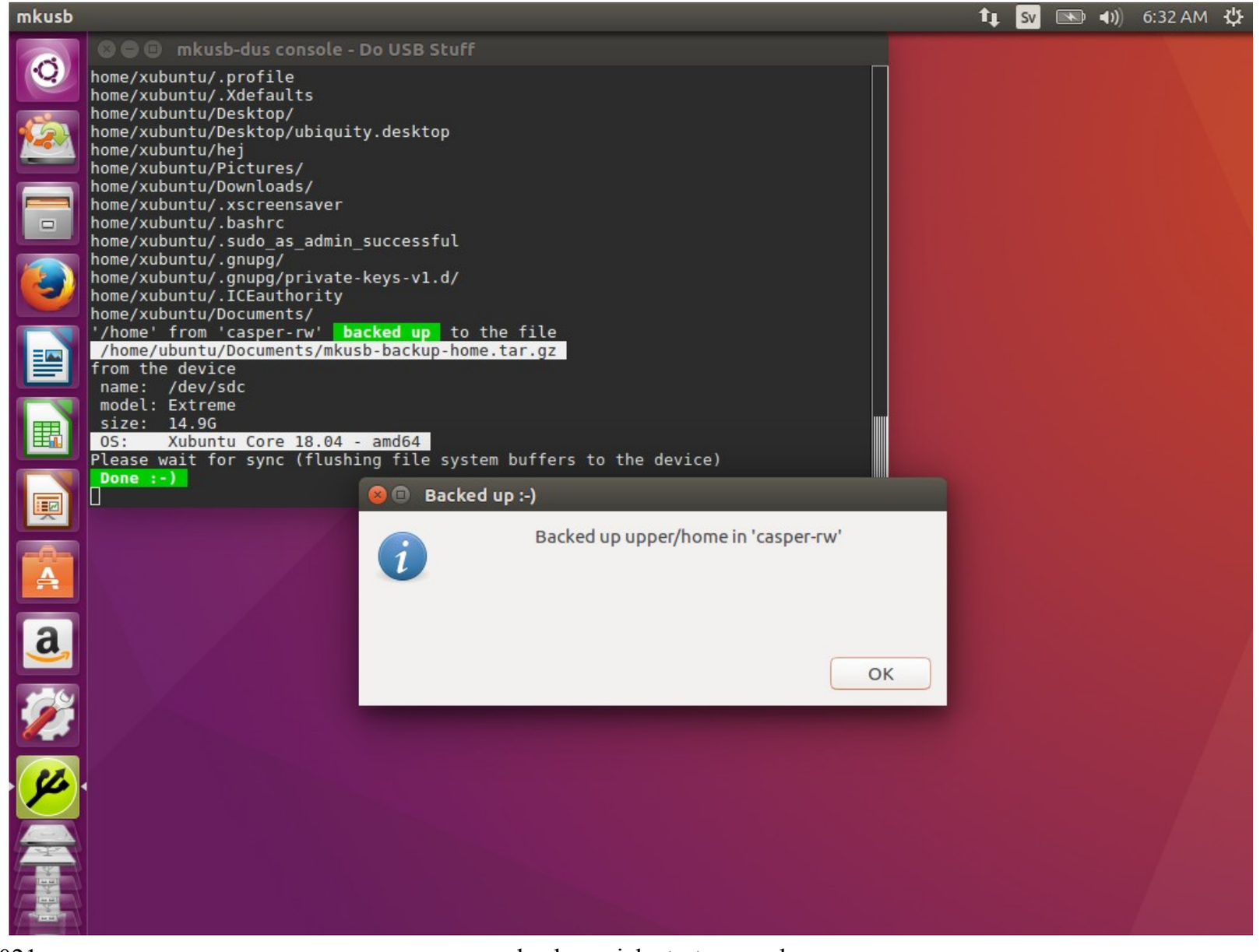
# Manage persistent live system

- ***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.

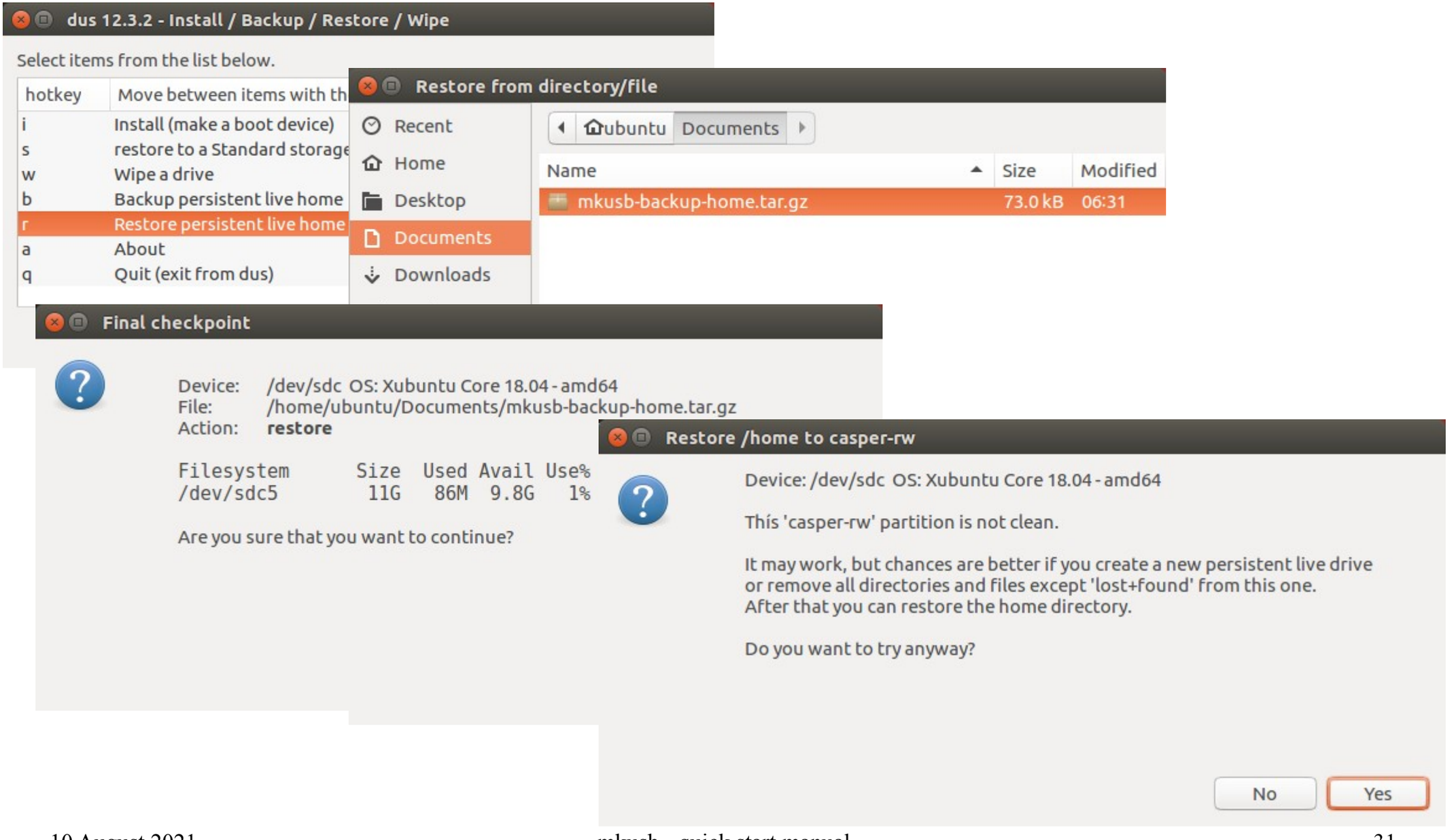
# Backup persistent live home 1(2)



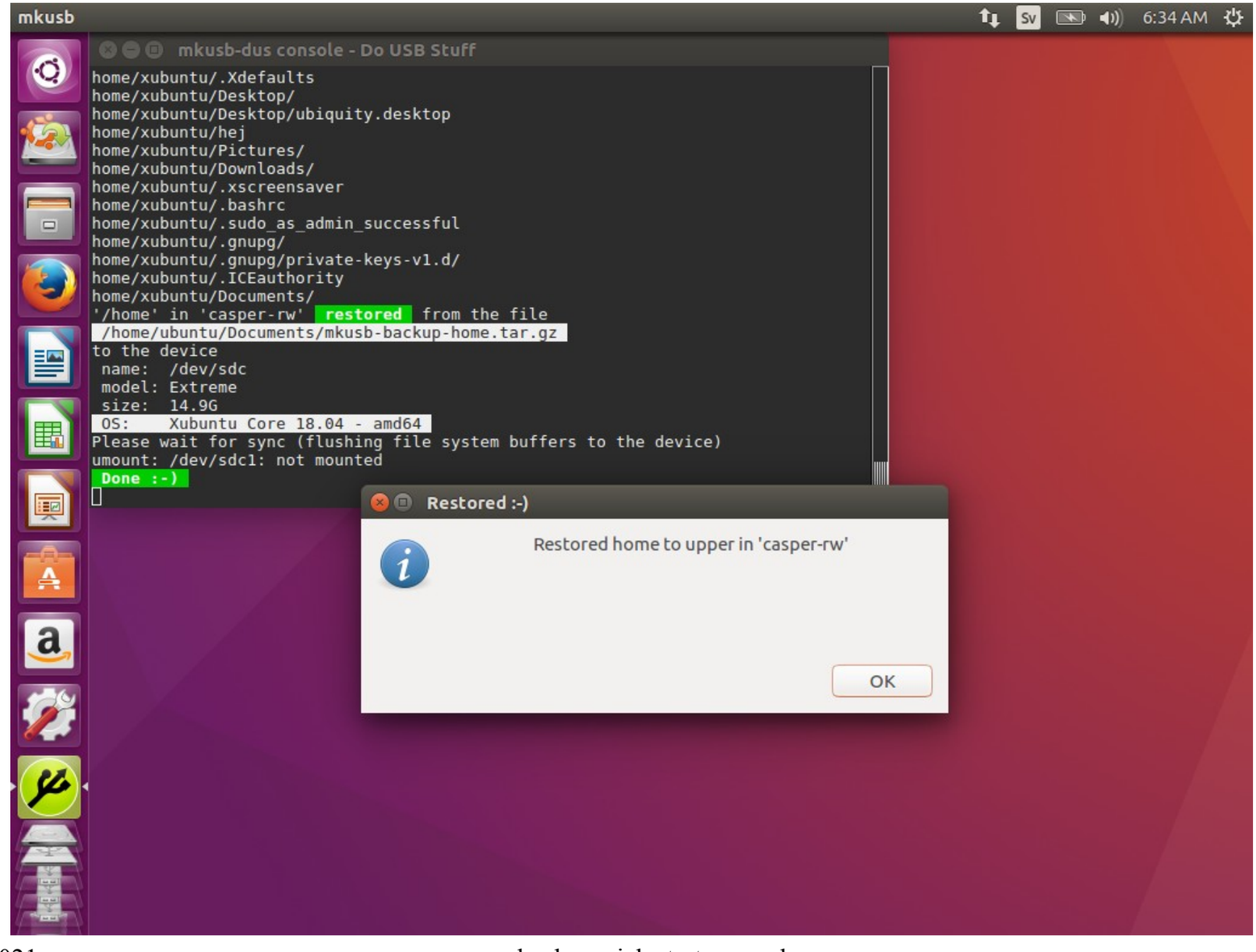
# Backup persistent live home 2(2)



# Restore persistent live home 1(2)



# 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