

Installation with DrakX

The Official Documentation for Mageia



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This manual was produced with the help of the [Calenco CCMS](https://www.calenco.com) [https://www.calenco.com].

It was written by volunteers in their free time. Please contact [Documentation Team](https://wiki.mageia.org/en/Documentation_team) [https://wiki.mageia.org/en/Documentation_team], if you would like to help improve this manual.

Installation with DrakX

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Installation with DrakX



No one will see all the installer screens that you see in this manual. Which screens you will see, depends on your hardware and the choices you make while installing.

1. Select and use ISOs

1.1. Introduction

Mageia is distributed via ISO images. This page will help you to choose which image best suits your needs.

There are three types of installation media:

- **Classical installer:** Booting with this media provides you with the maximum flexibility when choosing what to install, and for configuring your system. In particular, you have a choice of which Desktop environment to install.
- **LIVE media:** This option allows you to try out Mageia without having to actually install it, or make any changes to your computer. However, the Live media also includes an Installer, which can be started when booting the media, or after booting into the Live operating system itself.



The Live Installer is simpler compared to the Classical Installer - but you have fewer configuration options.



Live ISOs can only be used to create “clean” installations, they cannot be used to upgrade previously installed Mageia releases.

- **Net Install:** These are minimal ISO's containing no more than that which is needed to start the DrakX installer and find `DrakX-installer-stage2` and other packages that are needed to continue and complete the install. These packages may be on the PC hard disk, on a local drive, on a local network or on the Internet.

These media are very light (less than 100 MB) and are convenient if bandwidth is too low to download a full DVD, or if you have a PC without a DVD drive or is unable to boot from a USB stick.

More details are given in the next sections.

1.2. Media

1.2.1. Definition

Here, a medium (plural: media) is an ISO image file that allows you to install and/or update Mageia and, by extension, any physical medium (DVD, USB stick, ...) the ISO file is copied to.

You can find Mageia ISO's [here](http://www.mageia.org/en/downloads/) [http://www.mageia.org/en/downloads/].

1.2.2. Classical installation media

1.2.2.1. Common features

- These ISOs use the Classical installer called DrakX
- They are used for performing clean installs or to upgrade a previously installed version of Mageia
- Different media for 32 and 64-bit architectures
- Some tools are available in the Installer “Welcome” screen: *Rescue System*, *Memory Test*, and *Hardware Detection Tool*
- Each DVD contains many available desktop environments and languages
- You'll be given the choice during the installation to add non-free software

1.2.3. Live media

1.2.3.1. Common features

- Can be used to preview the Mageia operating system without having to install it
- The Live media also includes an Installer.
- Each ISO contains only one desktop environment (Plasma, GNOME or Xfce)
- Different media for 32 and 64-bit architectures
- They contain non-free software

1.2.3.2. Live DVD Plasma

- Plasma desktop environment only
- All available languages are present
- 64-bit architecture only

1.2.3.3. Live DVD GNOME

- GNOME desktop environment only
- All available languages are present
- 64-bit architecture only

1.2.3.4. Live DVD Xfce

- Xfce desktop environment only
- All available languages are present
- 32 or 64-bit architectures

1.2.4. Net install media

1.2.4.1. Common features

- Different media for 32 and 64-bit architectures
- First steps are English language only

1.2.4.2. *netinstall.iso*

- Contains only free software, for those who prefer to not use non-free software

1.2.4.3. netinstall-nonfree.iso

- Contains non-free software (mostly drivers, codecs...) for those who need it

1.3. Downloading and Checking Media

1.3.1. Downloading

Once you have chosen your ISO file, you can download it using either http or BitTorrent. In both cases, you are provided with some information, such as the mirror in use and an option to switch to an alternative if the bandwidth is too low.

If http is chosen you will also see some information regarding checksums.

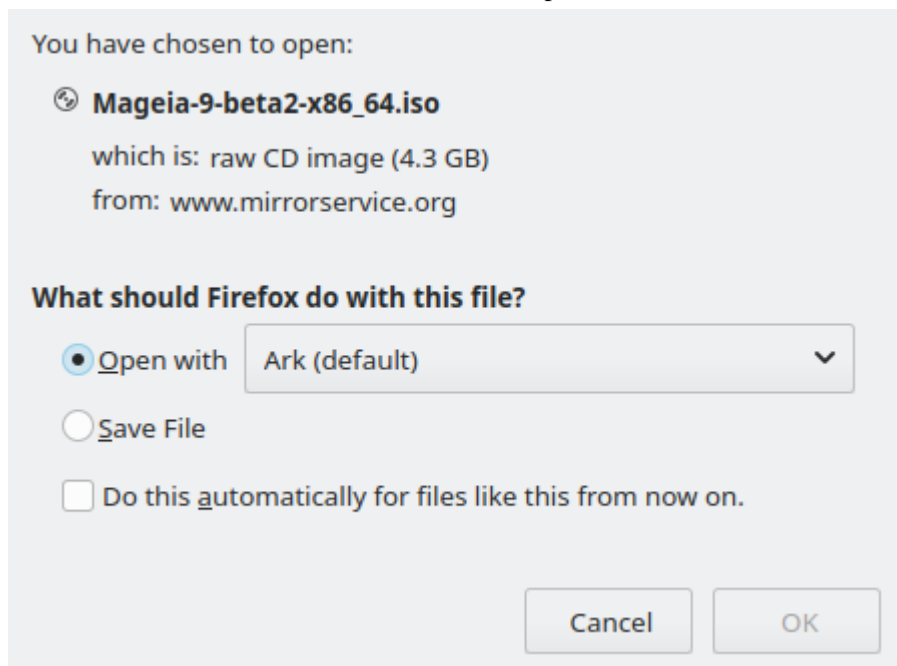
`md5sum`, `sha512sum` and `sha3-512sum` (the most secure) are tools to check the ISO integrity. Copy one of the checksums (string of alphanumeric characters) for use in the next section.

```
$ # You need both iso and checksum file in the same folder
$ md5sum -c Mageia-10-beta1-x86_64.iso.md5
Mageia-10-beta1-x86_64.iso: OK

$ sha512sum -c Mageia-10-beta1-x86_64.iso.sha512
Mageia-10-beta1-x86_64.iso: OK

$ sha3-512sum -c Mageia-10-beta1-x86_64.iso.sha3
Mageia-10-beta1-x86_64.iso: OK
```

In the meantime, a window to download the actual ISO will open:



Click on *Save File*, then click *OK*.

1.3.2. Checking the integrity of the downloaded media

The checksums referred to earlier, are digital fingerprints generated by an algorithm from the file to be downloaded. You may compare the checksum of your downloaded ISO against that of the original source ISO. If the checksums do not match, it means that the actual data on the ISO's do not match, and if that is the case, then you should retry the download or attempt a repair using BitTorrent.

To generate the checksum for your downloaded ISO, open a console, (no need to be root), and:

- To use the md5sum, type: **md5sum path/to/the/image/file.iso**
- To use the sha512sum, type: **sha512sum path/to/the/image/file.iso**
- To use the sha3-512sum, type: **sha3-512sum path/to/the/image/file.iso**

Example:

```
antony@localhost:~> md5sum /home/antony/Downloads/Mageia-9-beta2-x86_64.iso
1a62d414307835d3d950757db6870438 /home/antony/Downloads/Mageia-9-beta2-x86_64.iso
antony@localhost:~> █
```

then compare the result (you may have to wait for a while) with the ISO checksum provided by Mageia.

1.4. Burn or dump the ISO

The verified ISO can now be burned to a CD/DVD or “dumped” to a USB stick. This is not a standard copy operation, as a bootable medium will actually be created.

1.4.1. Burning the ISO to a CD/DVD

Whichever software you use, ensure that the option to burn an *image* is used. Burn *data* or *files* is NOT correct. See the [the Mageia wiki](https://wiki.mageia.org/en/Writing_CD_and_DVD_images) [https://wiki.mageia.org/en/Writing_CD_and_DVD_images] for more information.

1.4.2. Dump the ISO to a USB stick

All Mageia ISOs are hybrids, which means you can dump them to a USB stick and then use that to boot and install the system.



Dumping an image onto a flash device destroys any previous file-system on the device and all existing data will be lost.



Also, the only partition on the flash device will then just be the Mageia ISO partition.

So, if an ISO of about 4GB is written to an 8GB USB stick, the stick will then only show up as 4GB. This is because the remaining 4GB is no longer formatted - hence not currently available for use. To recover the original capacity, you must reformat and repartition the USB stick.

1.4.2.1. Using a graphical tool within Mageia

You can use a graphical tool like [IsoDumper](https://wiki.mageia.org/en/IsoDumper_Writing_ISO_images_on_USB_sticks) [https://wiki.mageia.org/en/IsoDumper_Writing_ISO_images_on_USB_sticks]

1.4.2.2. Using a graphical tool within Windows

You could try:

- [Rufus](http://rufus.akeo.ie/?locale=en_US) [http://rufus.akeo.ie/?locale=en_US] using the "ISO image" option
- [Win32 Disk Imager](http://sourceforge.net/projects/win32diskimager) [http://sourceforge.net/projects/win32diskimager]

1.4.2.3. Using the Command line within a GNU/Linux system



It is potentially **dangerous** to do this by hand. You risk overwriting potentially valuable existing data if you specify the wrong target device.

1. Open a console
2. Become a *root* (Administrator) user with the command **su -** (don't forget the -)

```
antony@localhost:~> su -  
Password:  
localhost:~ # █
```

3. Plug in your USB stick - but do not mount it (this also means do not open any application or file manager that could access or read it)
4. Enter the command **fdisk -l**

```
[root@localhost ~]# fdisk -l

Disk /dev/sda: 298.1 GiB, 320072933376 bytes, 625142448 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: dos
Disk identifier: 0x000db4bf
Partition 3 does not start on physical sector boundary.

Device      Boot      Start          End      Blocks      Id System
/dev/sda1   *                2048    21256191    10627072    83 Linux
/dev/sda2                21256192    63528959    21136384    83 Linux
/dev/sda3                63530964    625137344    280803190+    5 Extended
/dev/sda5                63531008    84873215    10671104    83 Linux
/dev/sda6                84875264    127016959    21070848    83 Linux
/dev/sda7                127019008    135985151    4483072     82 Linux swap / Solaris
/dev/sda8                135987200    198598655    31305728    83 Linux
/dev/sda9                198600704    471588863    136494080    83 Linux
/dev/sda10               471590912    496777994    12593541+    83 Linux
/dev/sda11               496781312    504955079     4086884     82 Linux swap / Solaris
/dev/sda12               504958976    625137344    60089184+    83 Linux

Disk /dev/sdb: 7.5 GiB, 8011087872 bytes, 15646656 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x15005631

Device      Boot Start          End      Blocks      Id System
/dev/sdb1   *            1      7598079    3799039+    17 Hidden HPFS/NTFS

[root@localhost ~]# █
```

5. Find the device name for your USB stick (by its size), for example /dev/sdb in the screenshot above, is an 8GB USB stick.

Alternatively, you can find the device name with the command **dmesg**. Towards the end of the following example, you can see the device name starting with **sd**, and in this case, **sdd** is the actual device. You can also see that its size is 2GB:

```
[72594.604531] usb 1-1: new high-speed USB device number 27 using
xhci_hcd
[72594.770528] usb 1-1: New USB device found, idVendor=8564,
idProduct=1000
[72594.770533] usb 1-1: New USB device strings: Mfr=1, Product=2,
SerialNumber=3
[72594.770536] usb 1-1: Product: Mass Storage Device
[72594.770537] usb 1-1: Manufacturer: JetFlash
[72594.770539] usb 1-1: SerialNumber: 18MJTWLMPUCC3SSB
[72594.770713] usb 1-1: ep 0x81 - rounding interval to 128 microframes,
ep desc says 255 microframes
```

```
[72594.770719] usb 1-1: ep 0x2 - rounding interval to 128 microframes,
ep desc says 255 microframes
[72594.771122] usb-storage 1-1:1.0: USB Mass Storage device detected
[72594.772447] scsi host8: usb-storage 1-1:1.0
[72595.963238] scsi 8:0:0:0: Direct-Access      JetFlash Transcend 2GB
1100 PQ: 0 ANSI: 4
[72595.963626] sd 8:0:0:0: [sdd] 4194304 512-byte logical blocks: (2.14
GB/2.00 GiB)
[72595.964104] sd 8:0:0:0: [sdd] Write Protect is off
[72595.964108] sd 8:0:0:0: [sdd] Mode Sense: 43 00 00 00
[72595.965025] sd 8:0:0:0: [sdd] No Caching mode page found
[72595.965031] sd 8:0:0:0: [sdd] Assuming drive cache: write through
[72595.967251]  sdd: sdd1
[72595.969446] sd 8:0:0:0: [sdd] Attached SCSI removable disk
```

6. Enter the command: `dd if=path/to/the/ISO/file of=/dev/sdX bs=1M`

Where X=your device name eg: /dev/sdd

Example: `dd if=/home/user/Downloads/Mageia-6-x86_64-DVD.iso of=/dev/sdd bs=1M`



It might be helpful to know that **if** stands for **input file** and **of** stands for **output file**

7. Enter the command: `sync`
8. This is the end of the process, and you may now unplug your USB stick.

2. DrakX, the Mageia Installer

Whether you are new to GNU-Linux or an experienced user, the Mageia Installer is designed to help make your installation or upgrade as easy as possible.

2.1. The installation steps

- The install process is divided into a number of steps - the status of which is indicated in a panel to the left of the screen.
- Each step has one or more screens, which may also have *Advanced* sections with extra, less commonly required options.
- Most screens have *Help* buttons for further details about the particular step.



If at some point during the install you decide to abort the installation, it is possible to reboot, but please think twice before you do this. Once a partition has been formatted or updates have started to be installed, your computer is no longer in the same state and rebooting it could very well leave you with an unusable system.

If, in spite of this, you are very sure rebooting is what you want, go to a text terminal by pressing the keys **Ctrl+Alt+F2** together. After that, press **Ctrl+Alt+Delete** together to reboot.

2.2. Installation Welcome Screen

The particular screen that you will first see when booting from the Installation media will depend on whether your computer motherboard is of the Legacy (BIOS) or UEFI type.

The welcome menu screen has various options, however the default option will start the installer, and is normally all that you will need.

2.2.1. Legacy (BIOS) Systems



Menu

- **Install Mageia**

Install Mageia to a hard disk. This is the default option, and will automatically start after a short while unless another option is selected.

- **Rescue System**

This option allows you to either re-install the bootloader for an existing Mageia installation or you can use it to restore a Windows bootloader.

- **Memory Test**

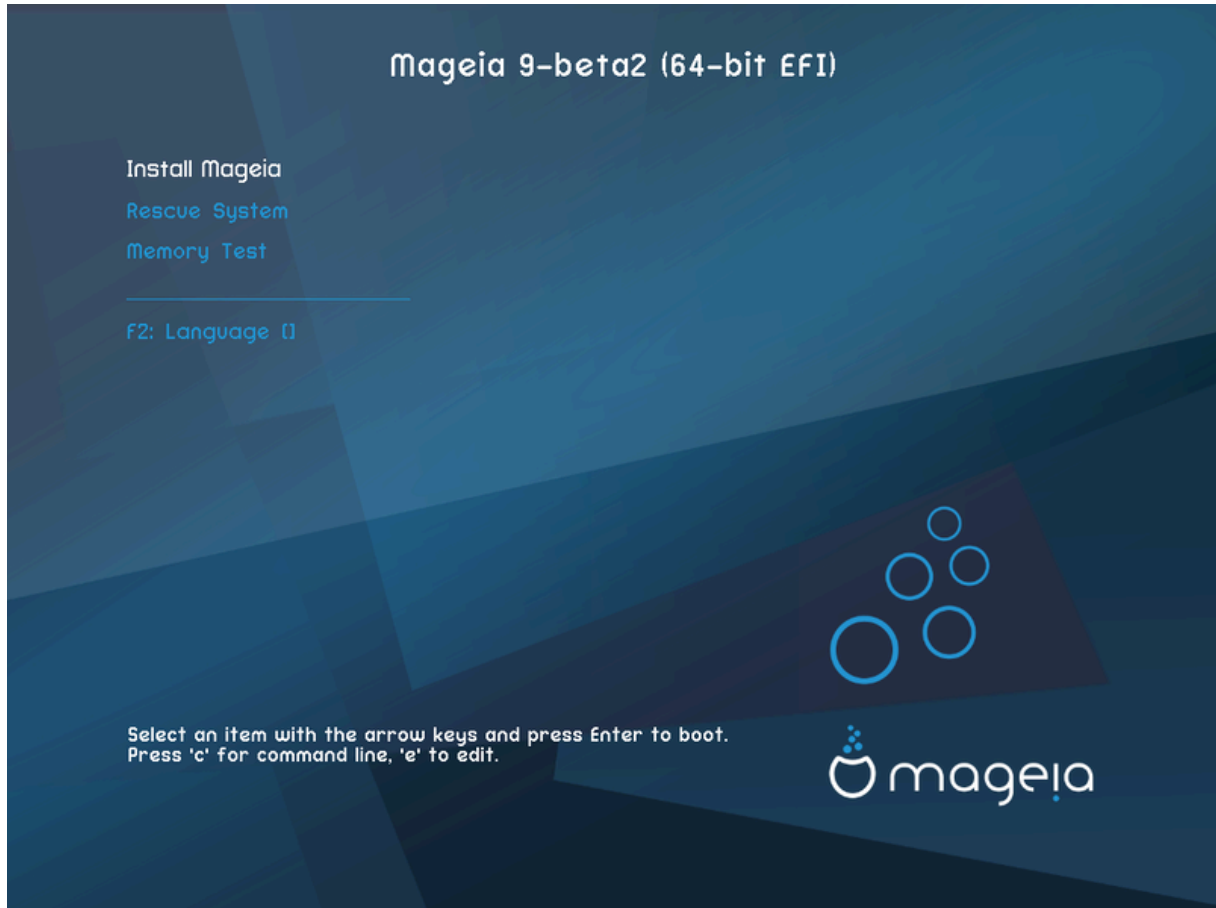
Test the installed RAM by performing multiple read and write operations. Reboot to end the test.

- **F2: Language**

Press F2 for alternative languages.

2.2.2. UEFI Systems

From this screen, you can access options by pressing **e** to enter the edit mode. To come back to this screen, press **Esc** to quit without saving or press **F10** to save and quit.



Menu

- **Install:** Start the Install process
- **Rescue:** This option allows you to either re-install the bootloader for an existing Mageia installation or you can use it to restore a Windows bootloader.
- **F2: Language:** Press **F2** for alternative languages.

If you booted from a USB stick, you will see the above options duplicated, and in this case, you should use the set that will be suffixed with "USB".

2.3. Installation Problems and Possible Solutions

2.3.1. No Graphical Interface

- After the initial screen you did not progress to the *Language Selection* screen. This can happen with some graphic cards and older systems. Try using low resolution by typing **vgalo** at the prompt.
- If the hardware is very old, a graphical installation may not be possible. In this case it is worth trying a text-mode installation. To use this press **Esc** at the *Welcome* screen and confirm with **ENTER**. You will be presented with a black screen with a **boot :** prompt. Type **text** and press **ENTER** to continue with the installation in text mode.

2.3.2. The Install Freezes

If the system appeared to freeze during the installation, this may be a problem with hardware detection. In this case the automatic hardware detection may be bypassed and dealt with later. To try this, type **noauto** at the prompt. This option may also be combined with other parameters as necessary.

2.3.3. RAM problem

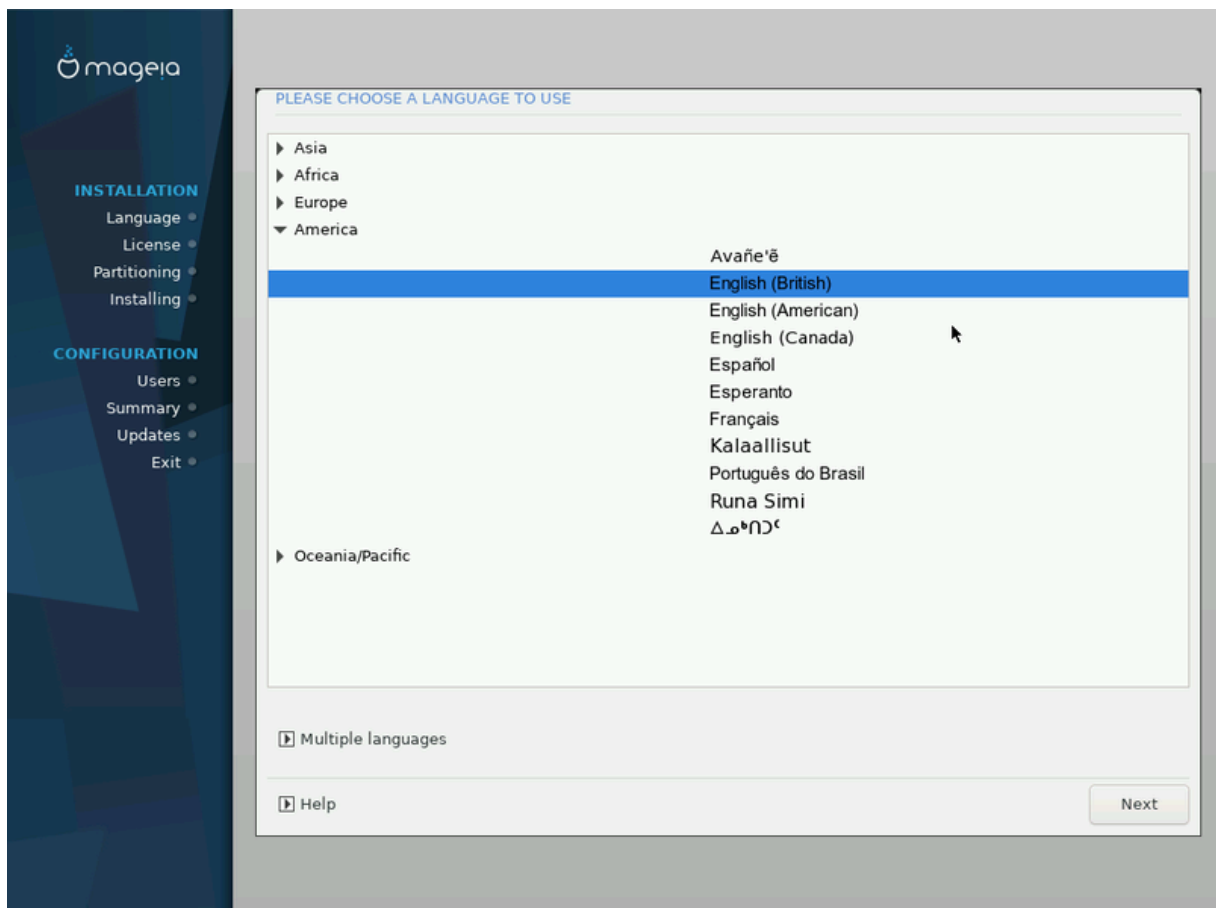
This will rarely be needed, but in some cases the hardware may report the available RAM incorrectly. To specify this manually, you can use the `mem=xxxM` parameter, where `xxx` is the correct amount of RAM. e.g. `mem=256M` would specify 256MB of RAM.

2.3.4. Dynamic partitions

If you converted your hard disk from `Basic` format to `Dynamic` format in Microsoft Windows, then it is not possible to install Mageia on this disc. To revert to a `Basic` disk, see the Microsoft documentation: <http://msdn.microsoft.com/en-us/library/cc776315.aspx>.

3. Please choose a language to use

- Select your preferred language, by first expanding the list for your continent. Mageia will use this selection during the installation and for your installed system.
- If it is likely that you (or others) will require several languages to be installed on your system, then you should use the *Multiple languages* option to add them now. It will be difficult to add extra language support after installation.



Even if you choose more than one language, you must first choose one as your preferred language from the main list of languages. It will also be marked as chosen in the *Multiple languages* screen.

- If your keyboard language is not the same as your preferred language, then it is advisable to install the required language for your keyboard as well
- Mageia uses UTF-8 (Unicode) support by default. This may be disabled in the *Multiple languages* screen if you know that it is inappropriate for your language. Disabling UTF-8 applies to all installed languages.
- You can change the language for your system post-installation in the Mageia Control Center # System # localization for your system.

4. License and Release Notes

4.1. License Agreement

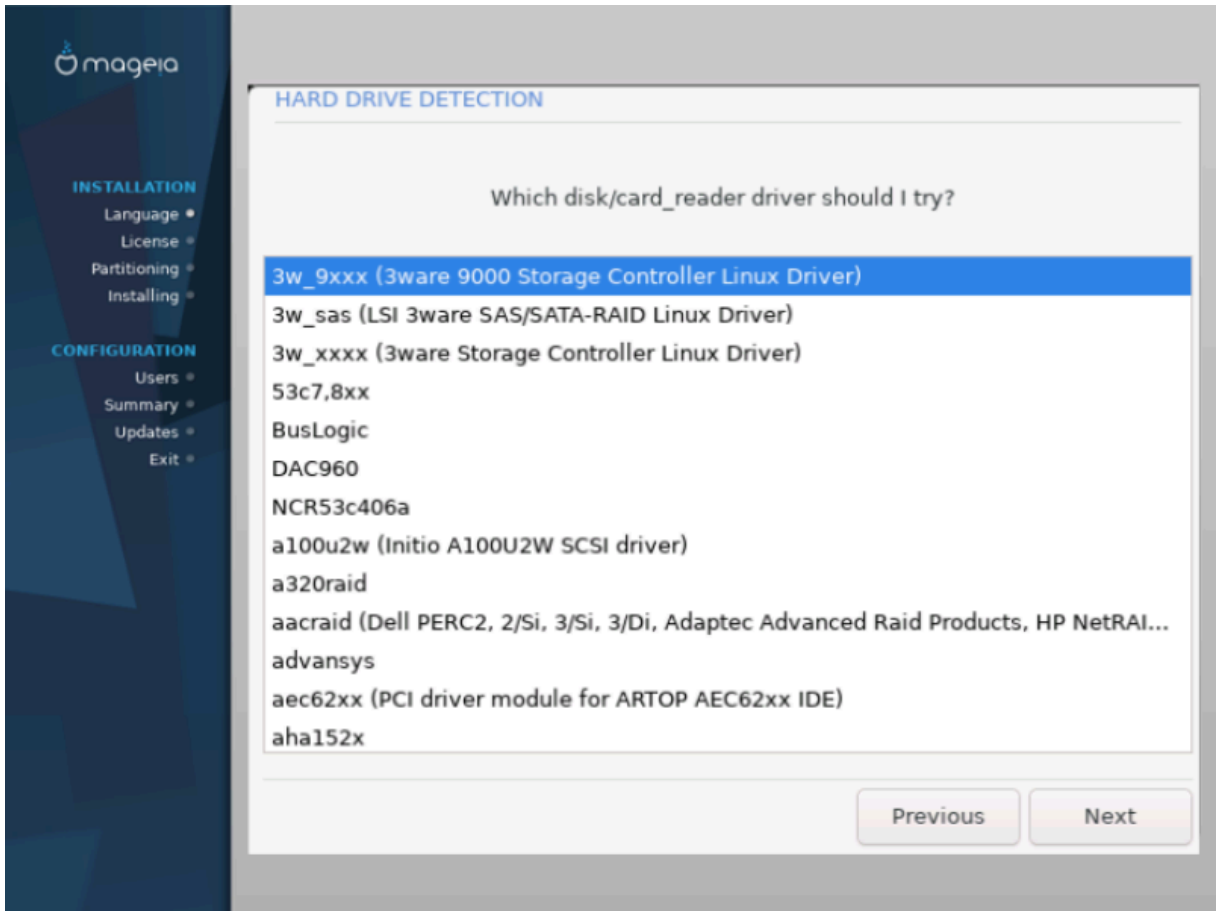
- Before installing Mageia, please read the license terms and conditions carefully.
- These terms and conditions apply to the entire Mageia distribution and must be accepted before you can continue.
- To proceed, simply select *Accept* and then click on *Next*

If you decide not to accept these conditions, then we thank you for your interest in Mageia. Clicking *Quit* will reboot your computer.

4.2. Release Notes

Important information about this particular Mageia release can be viewed by clicking on the *Release Notes* button.

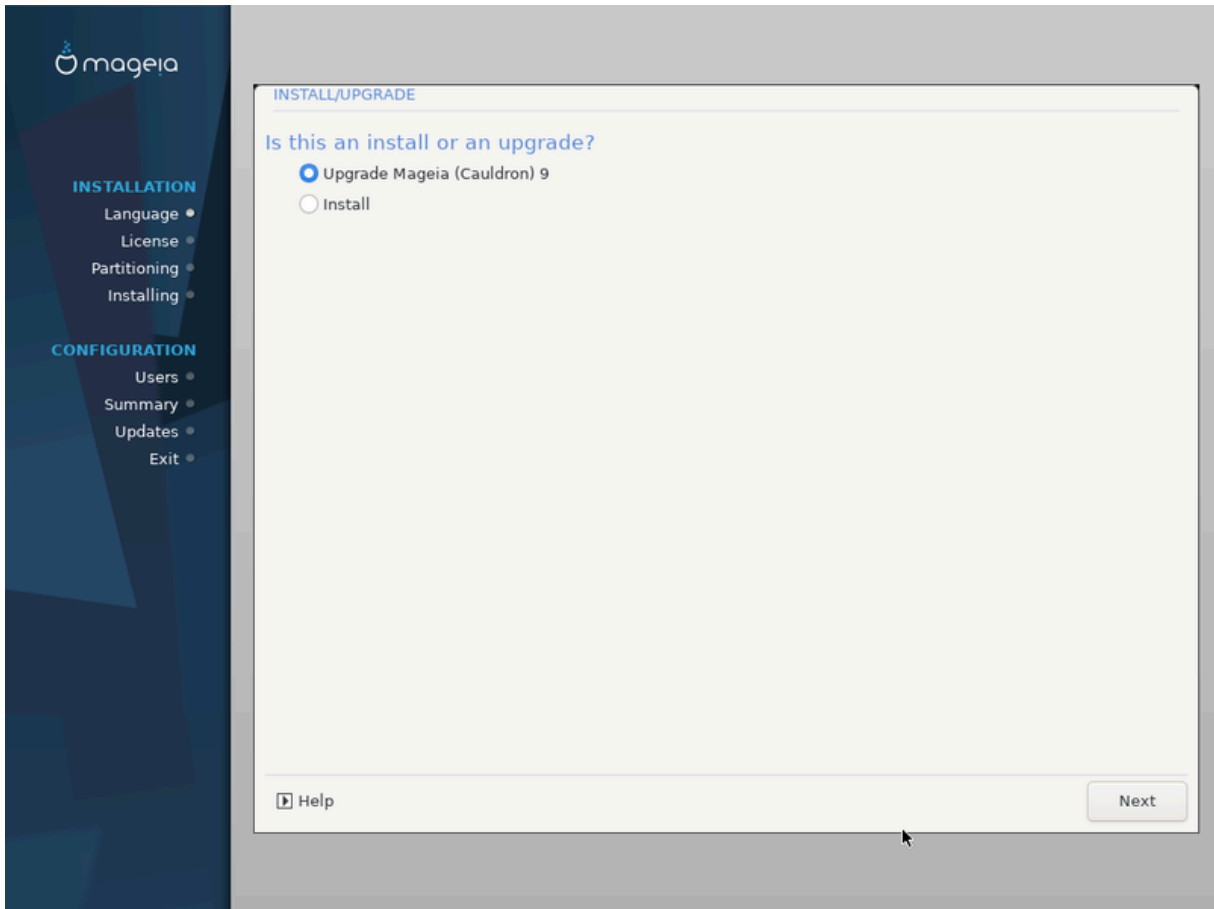
5. Setup SCSI



DrakX will normally detect hard disks correctly. However, with some older SCSI controllers it may be unable to determine the correct drivers to use and subsequently fail to recognise the drive.

If your device is not recognised, you will need to manually tell DrakX which SCSI drive(s) you have. DrakX should then be able to configure the drive(s) correctly.

6. Install or Upgrade



- **Install**

Use this option to perform a fresh installation of Mageia. This will format the `root` partition (`/`), but can preserve a pre-existing `/home` partition (a dedicated `/home` partition, rather than being incorporated within the root (`/`) partition itself).

- **Upgrade**

Use this option to upgrade an existing installation of Mageia.

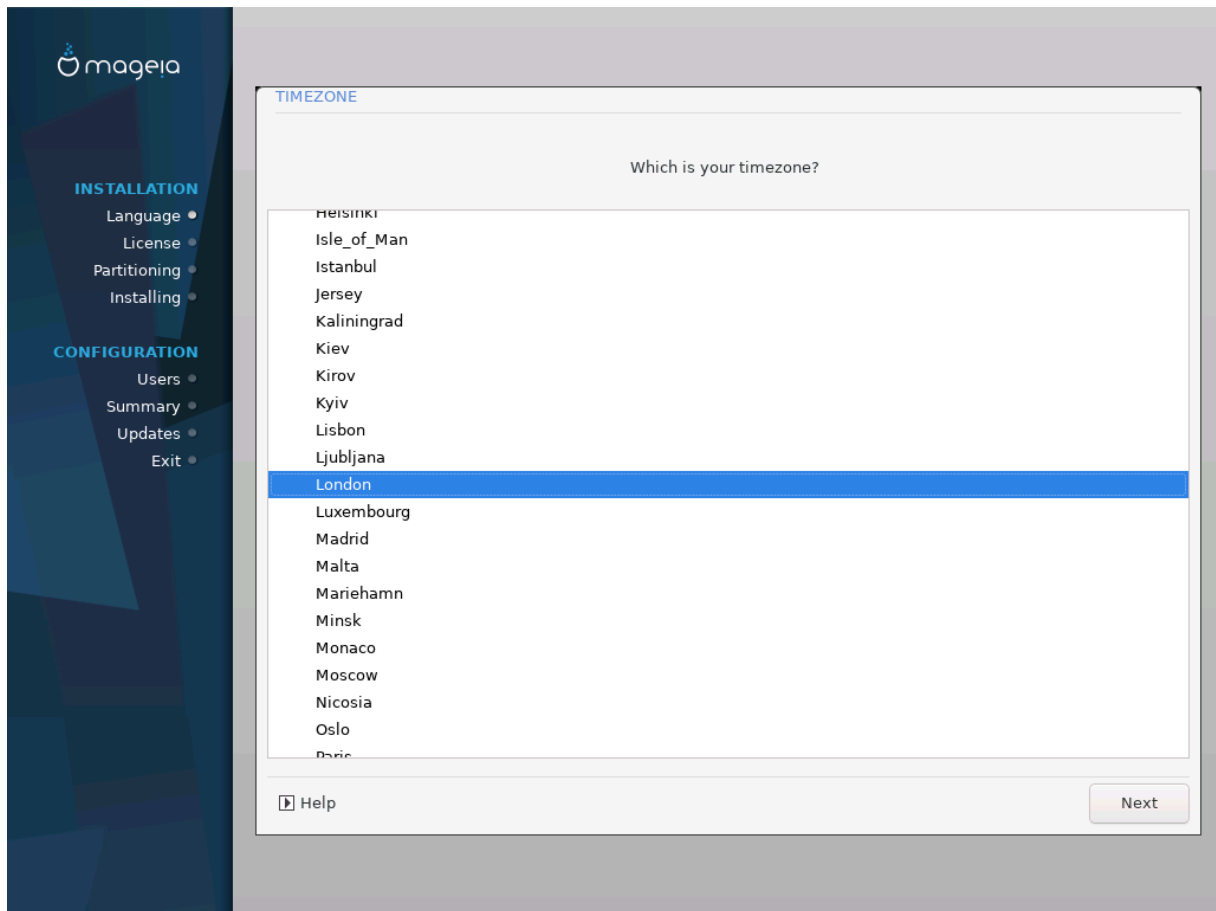


Only upgrading from a previous Mageia version that was *still supported* when this Installer's version was released, has been thoroughly tested. If you want to upgrade a Mageia version that has reached its “End Of Life” then it is better to do a “clean” install instead, while preserving your `/home` partition.



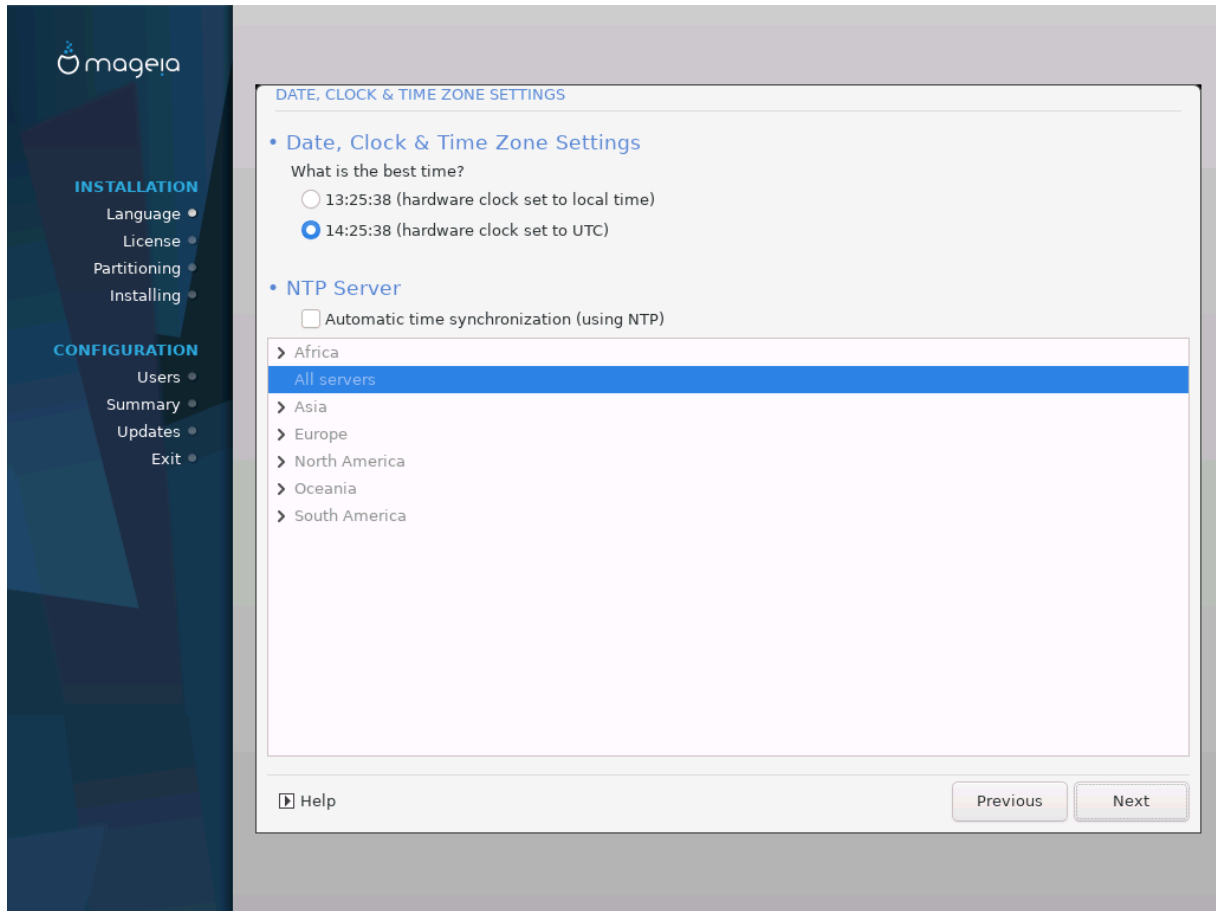
If you have discovered that you forgot to select an additional language, you can return from the *Install or Upgrade* screen to the language choice screen by pressing **Ctrl+Alt+Home**. Do **NOT** do this later in the install.

7. Configure your Timezone



- Select your timezone by choosing your country, or a city close to you in the same timezone.
- In the next screen you can configure your hardware clock and enable time synchronization.

8. Date, Clock and Time Zone Settings



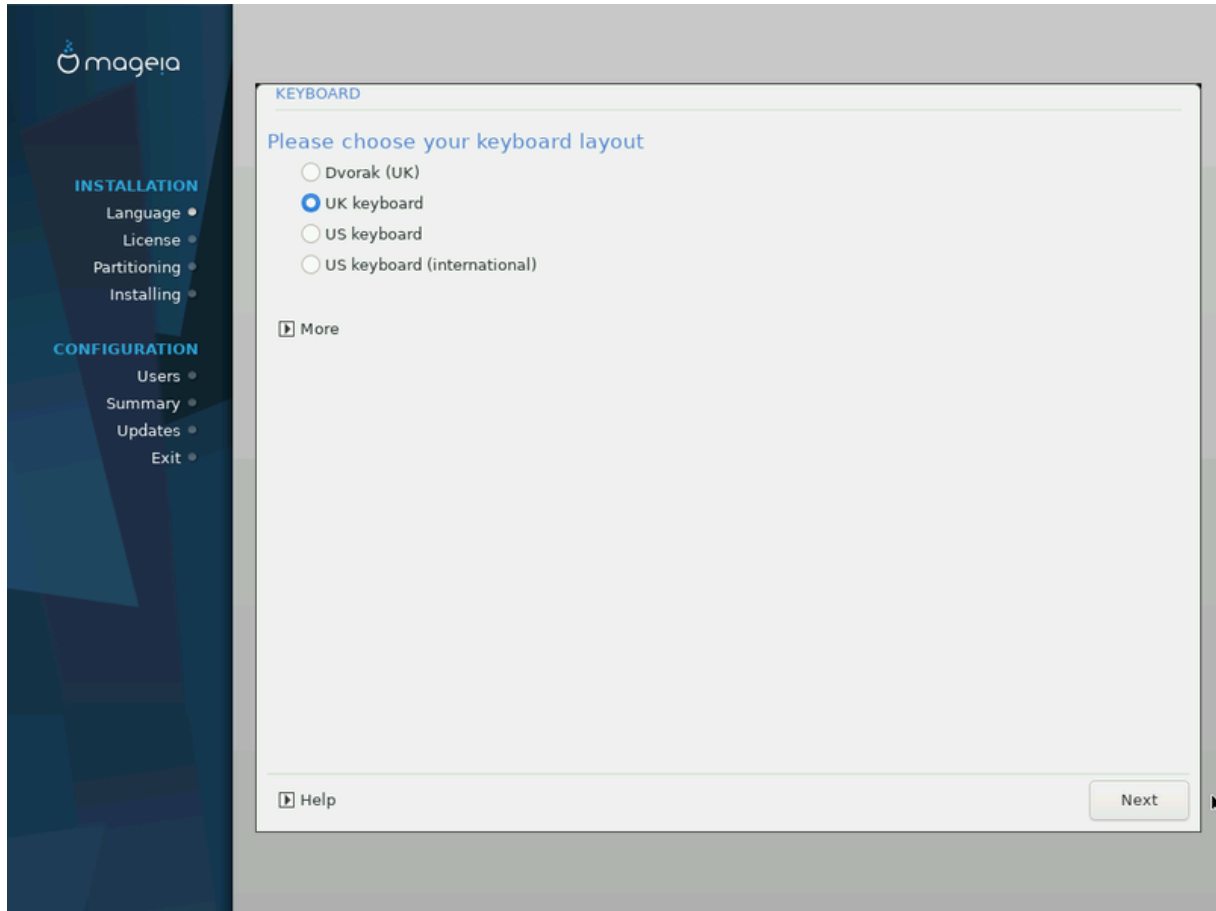
- In this screen, you can choose between setting your hardware clock to UTC or to local time.
- Something else you can do here, is to enable automatic time synchronization with NTP. For that to work, you need to select an NTP server. Choose one that is close to you.



If you have more than one operating system on your computer, make sure they are all set to local time, or all to UTC.

9. Keyboard

DrakX selects an appropriate keyboard for your language. If no suitable keyboard is found it will default to a US keyboard layout.



- Make sure that the selection is correct or choose another keyboard layout. If you don't know which layout your keyboard has, look in the specifications that came with your system, or ask the computer vendor. There may even be a label on the keyboard that identifies the layout. You can also look here: en.wikipedia.org/wiki/Keyboard_layout [http://en.wikipedia.org/wiki/Keyboard_layout]
- If your keyboard isn't in the list shown, click on *More* to get a fuller list, and select your keyboard there.



After choosing a keyboard from the *More* dialogue, you'll return to the first keyboard choice dialogue and it will seem as though a keyboard from that screen was chosen. You can safely ignore this and continue the installation: the keyboard chosen from the full list will be applied.

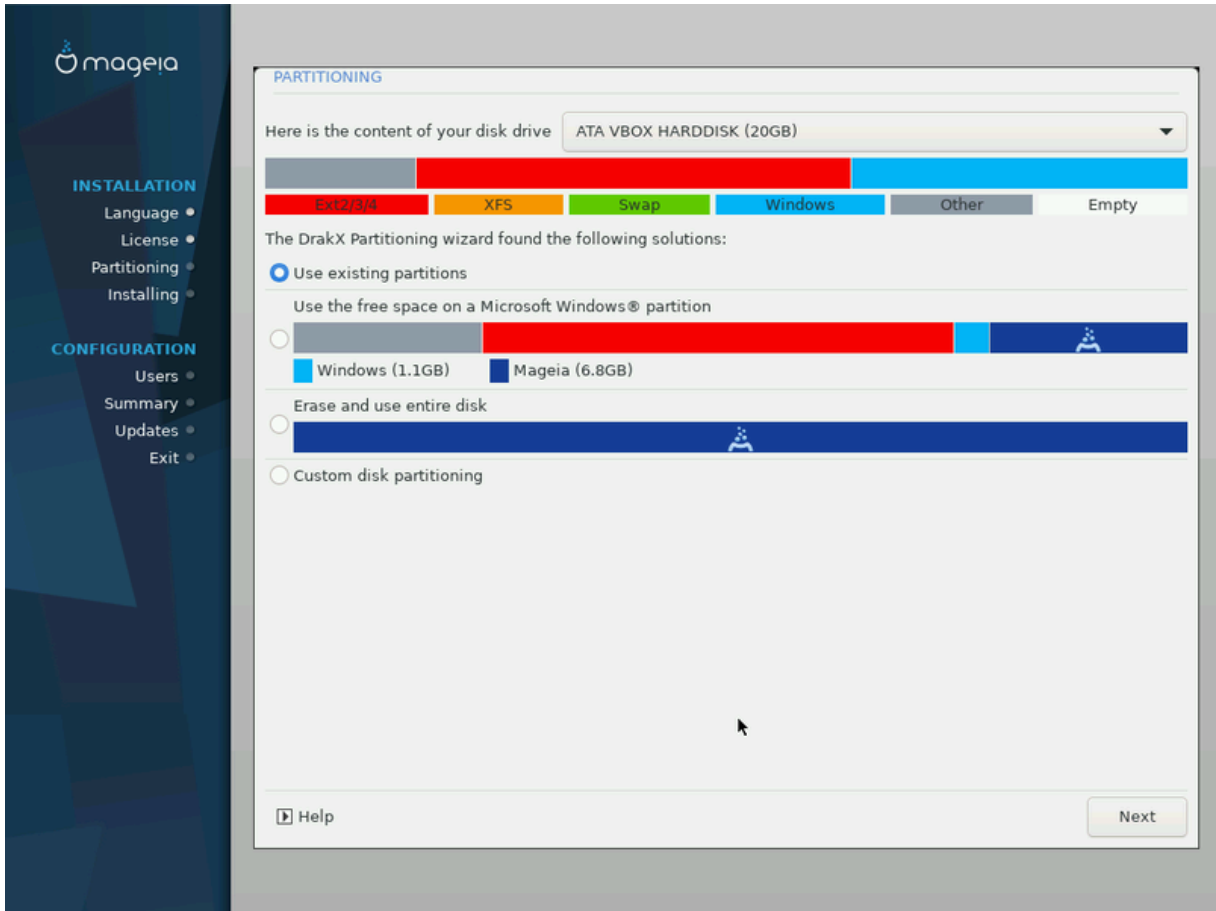
- If you choose a keyboard based on non-Latin characters, you will see an extra dialogue screen asking how you would prefer to switch between the Latin and non-Latin keyboard layouts

10. Partitioning

10.1. Suggested Partitioning

In this screen you can see the content of your hard drive(s) along with the DrakX partitioning proposals for where to install Mageia.

The actual options available from those shown below will vary according to the layout and content of your particular hard drive(s).



Main Options

- **Use Existing Partitions**

If this option is available, then existing Linux compatible partitions have been found and may be used for the installation.

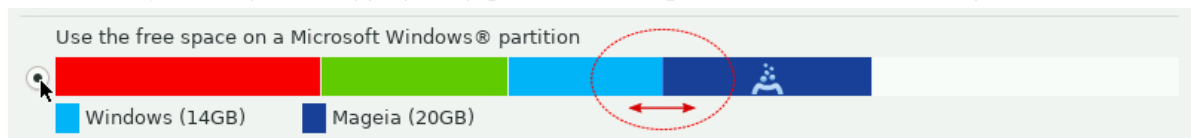
- **Use Free Space**

If you have unused space on your hard drive then this option will use it for your new Mageia installation.

- **Use Free Space on a Windows Partition**

If you have unused space on an existing Windows partition, the installer may offer to use it. This can be a useful way of making room for your new Mageia installation but see the warning below.

With this option, the installer displays the remaining Windows partition in light blue and the proposed Mageia partition in dark blue with their intended sizes just underneath. You have the option to modify these sizes by clicking and dragging the gap between both partitions. See the following screenshot:



This involves shrinking the size of the Windows partition, and therefore is a risky operation, so you should make sure you have backed up all important files before proceeding.



The partition must be "clean", meaning that Windows must have closed down correctly the last time it was used. It must also have been defragmented, although this is not a guarantee that all files in the partition have been moved out of the area that is about to be used for Mageia.

- **Erase and use Entire Disk**

This option will allocate the entire drive for Mageia



This will erase ALL data on the selected hard drive. Take care! If you intend to use part of the disk for something else, or you already have data on the drive that you are not prepared to lose, then do not use this option.

- **Custom Disk Partitioning**

This gives you complete control over the placing of the installation on your hard drive(s).

If you are not using the *Custom disk partitioning* option, then the installer will allocate the available space according to the following rules:

- If the total available space is less than 50 GB, then only one partition is created. This will be the / (root) partition.
- If the total available space is greater than 50 GB, then three partitions are created
 - 6/19 of the total available place is allocated to / with a maximum of 50 GB
 - 1/19 is allocated to `swap` with a maximum of 4 GB
 - the rest (at least 12/19) is allocated to `/home`

This means that from 160 GB or greater available space, the installer will create three partitions:

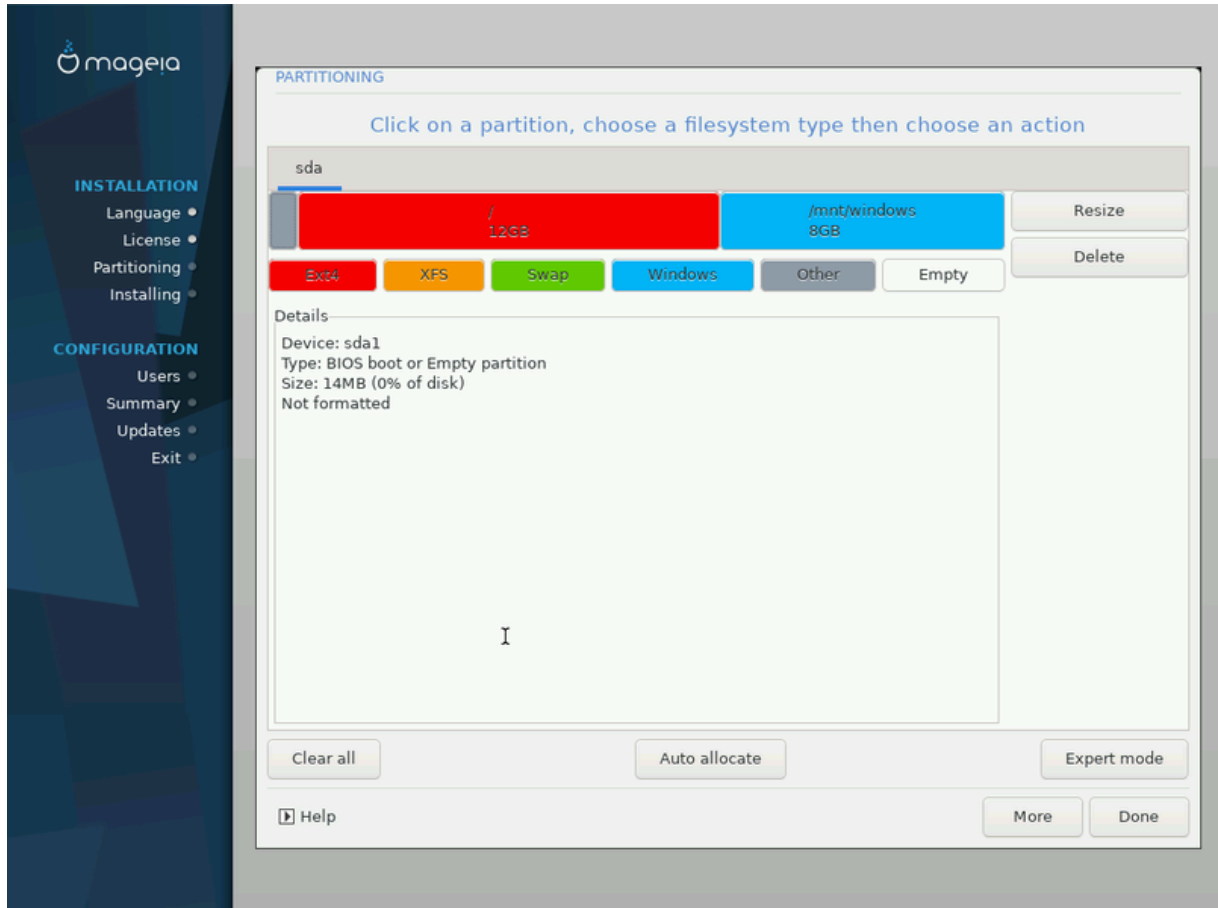
- 50 GB for /
- 4 GB for `swap`
- and the remainder for `/home`

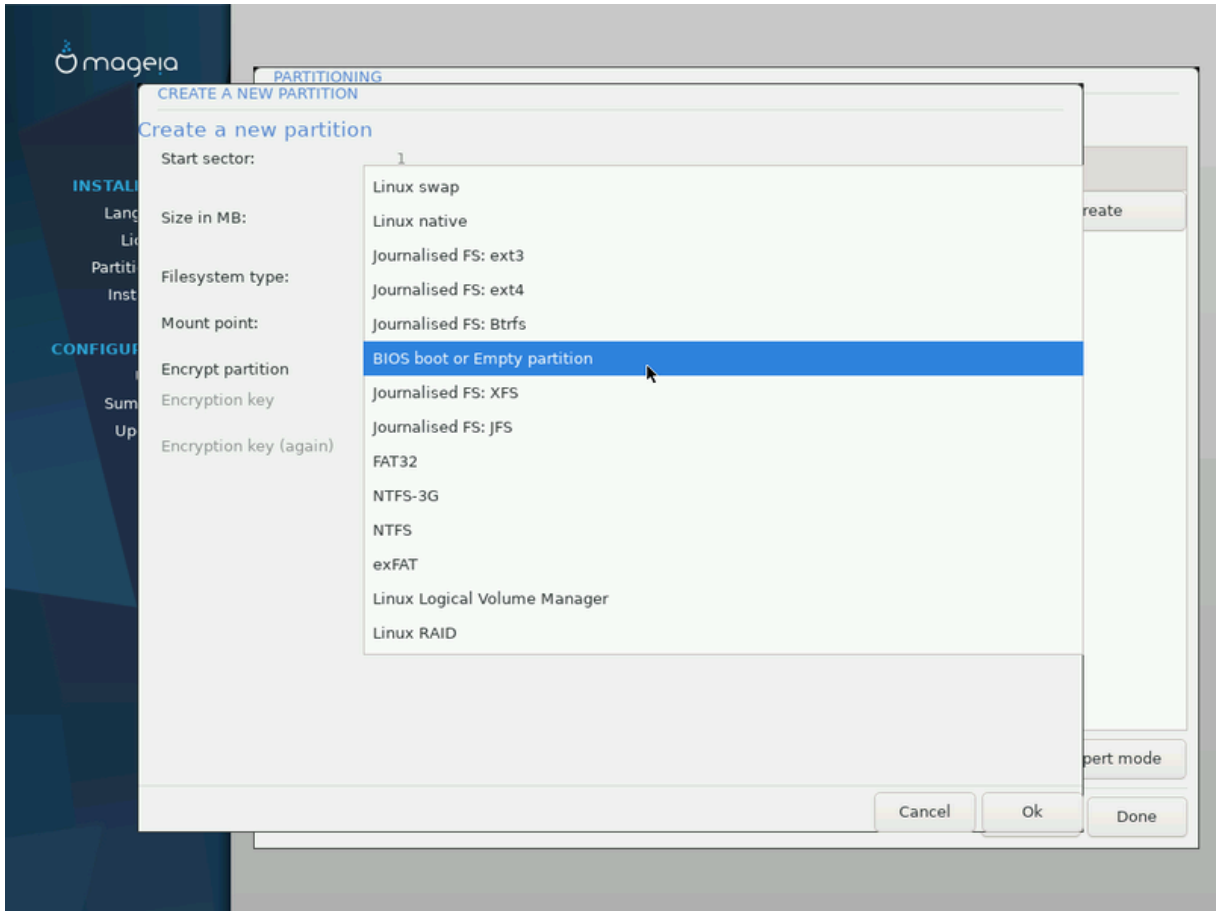


If you are using a UEFI system, the ESP (EFI System Partition) will be automatically detected - or created if it does not exist yet - and mounted on `/boot/EFI`. The *Custom disk partitioning* option is the only one that allows to check it has been correctly done.

If you are using a Legacy (also known as BIOS) system with a GPT partitioned disk, you need to create a BIOS boot partition if it doesn't already exist. It should be about 1 MiB with no mount point. It can be created with the Installer, under *Custom disk partitioning*, like any other partition. Be sure to select "BIOS boot partition" for filesystem type.

See [DiskDrake](#) for information on how to proceed.





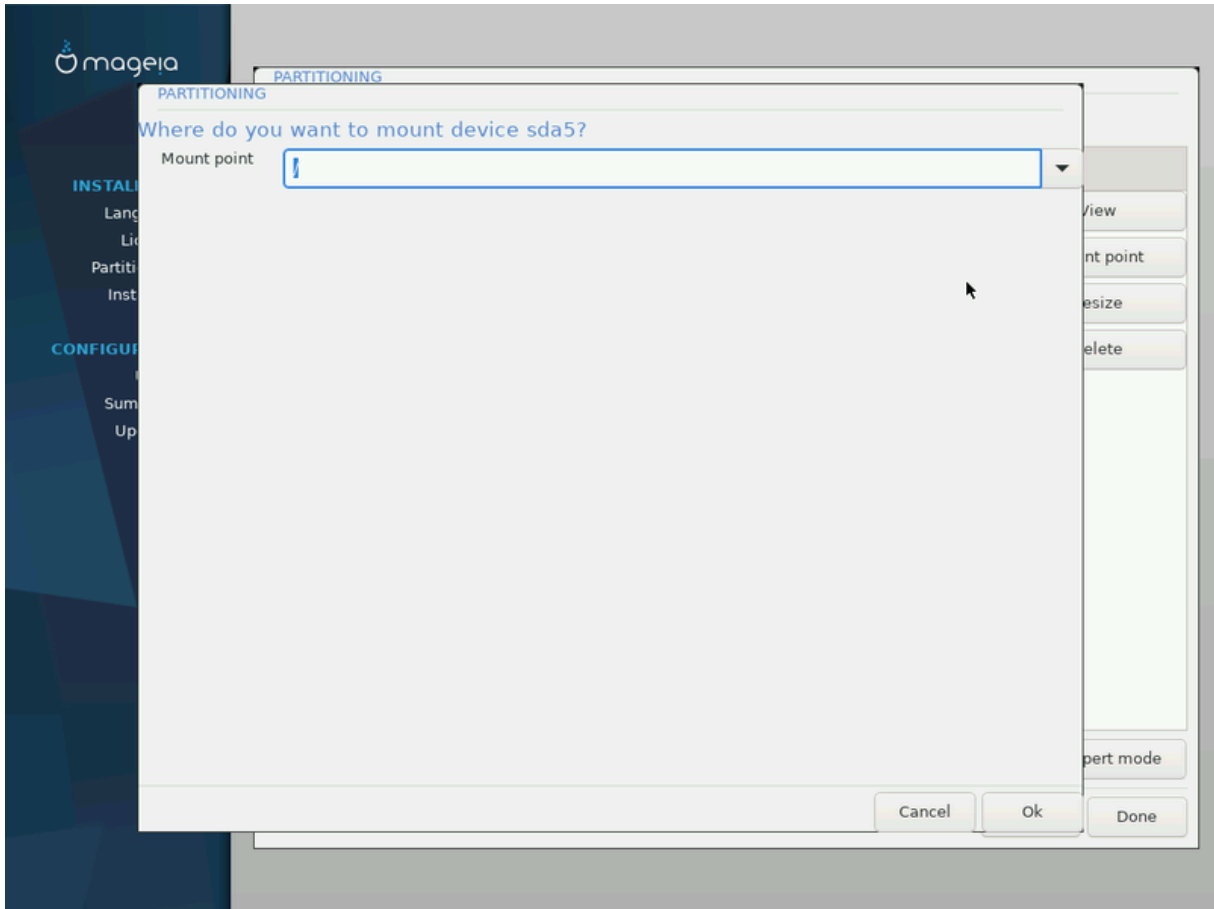
Some newer drives are now using 4096 byte logical sectors, instead of the previous standard of 512. Due to lack of available hardware, the partitioning tool used in the installer has not been tested with such a drive.

Some SSD devices now use an erase block size over 1 MB. If you have such a device we suggest that you partition the drive in advance, using an alternative partitioning tool like gparted, and to use the following settings:

- *Align to = MiB*
- *Free space preceding (MiB) = 2*

Also make sure all partitions are created using an even number of megabytes.

10.2. Choose the mount points



Here you see the Linux partitions that have been found on your computer. If you don't agree with the DrakX suggestions, you can change the mount points yourself.

- To the left of the drop-down menus is a list of available partitions. For example: `sda` is a hard drive - and `5` is a *partition number*, followed by the (*capacity, mount point, filesystem type*) of the partition.
- If you have several partitions, you can choose various different *mount points* from the drop down menu, such as `/`, `/home` and `/var`. You can even make your own mount points, for instance `/video` for a partition where you want to store your films, or perhaps `/Data` for all your data files.
- For any partitions that you don't need to make use of, you can leave the mount point field blank.



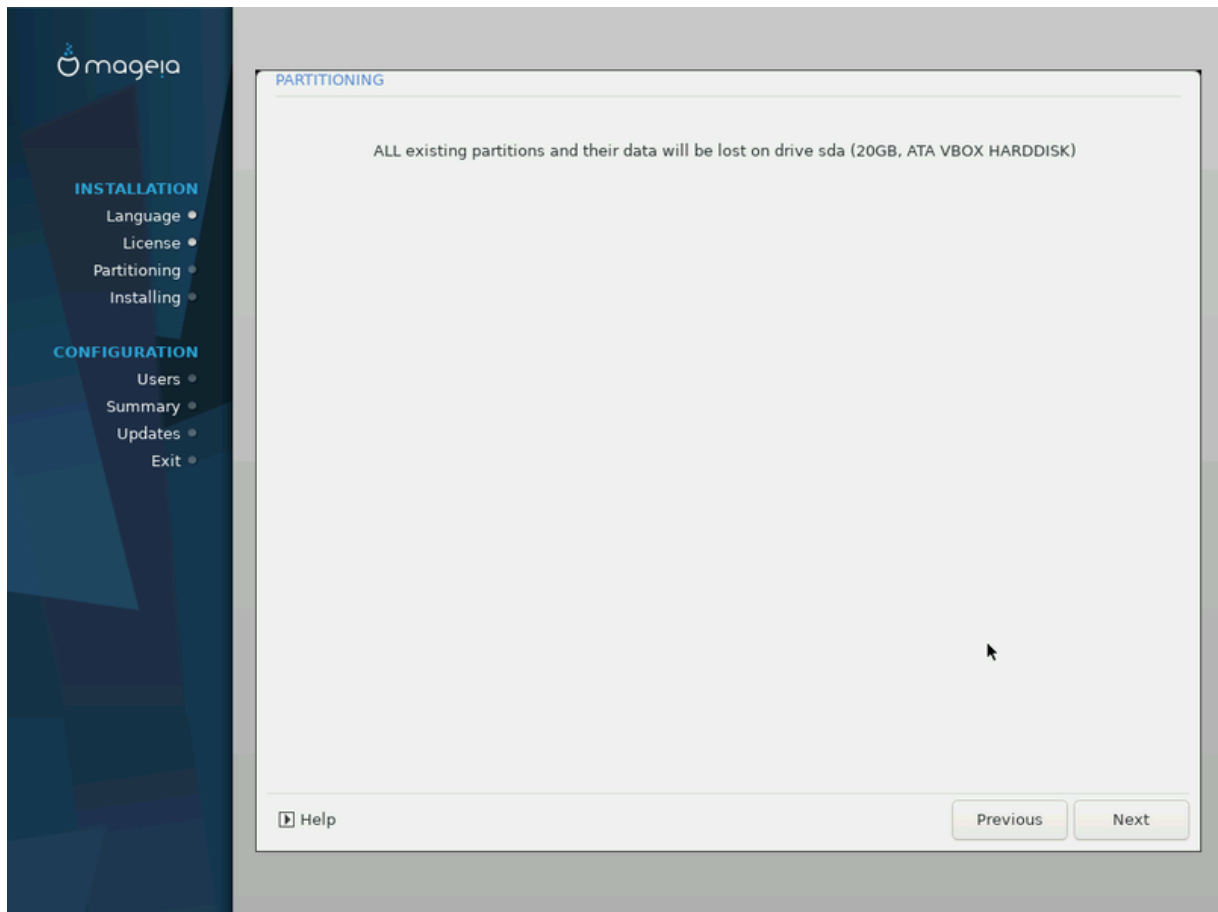
If you make any changes here, ensure you still have a `/` (root) partition.



If you are not sure what to choose, click *Previous* to go back and then tick *Custom disk partitioning*, where you can click on a partition to see its type and size.

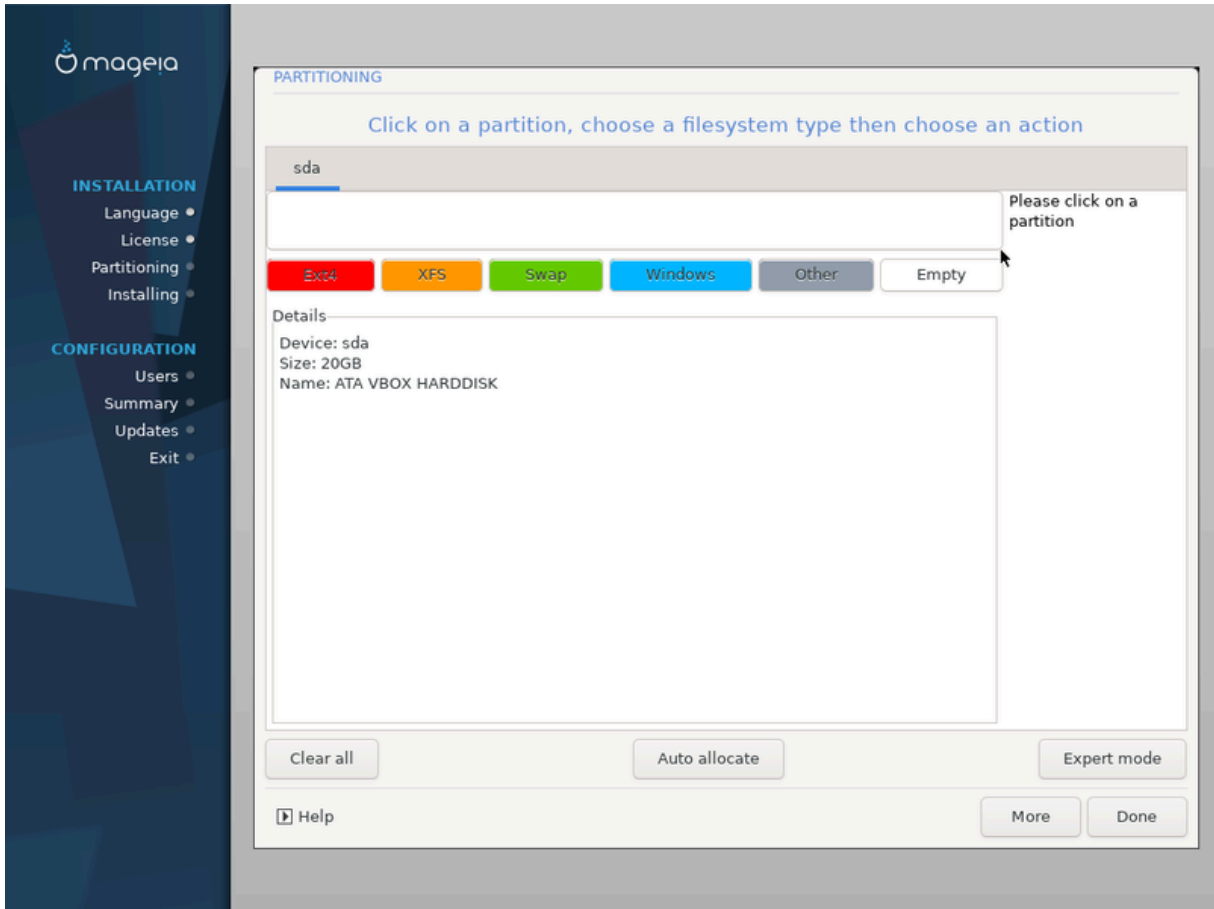
If you are sure the mount points are correct, click on *Next*, and choose whether you only want to format the partition suggested by DrakX, or more.

10.3. Confirm hard disk to be formatted



- Click on *Previous* if you are at all unsure about your choice.
- Click on *Next* to proceed if you are sure that it is OK to erase **every** partition, **every** operating system and **all data** that might be on that hard disk.

10.4. Custom Disk Partitioning with DiskDrake



- Modify the layout of your disk(s) here. You can remove or create partitions, change the filesystem or size of a partition and even view their details before you start.
- There is a tab at the top for every detected hard disk (or other storage device, like a USB key), for example: sda, sdb, sdc etc.
- For all other actions: click on the desired partition first. Then view it, or choose a filesystem and a mount point, resize it or wipe it. *Expert mode* provides more options such as to label (name) a partition, or to choose a partition type.
- Continue until you have adjusted everything to your satisfaction, then click *Done* when you're ready.



1. Take care with the *Clear all* option, use it only if you are sure you want to wipe all partitions on the selected storage device.
2. If you wish to use encryption on your `/` partition you must ensure that you have a separate `/boot` partition. The encryption option for the `/boot` partition must NOT be set, otherwise your system will be unbootable.



- If you are installing Mageia on a UEFI system, check that an ESP (EFI System Partition) is present and correctly mounted on `/boot/EFI`. See Figure 1 below.
- If you are installing Mageia on a Legacy/GPT system, check that a BIOS boot partition is present and of the correct type. See Figure 2 below.

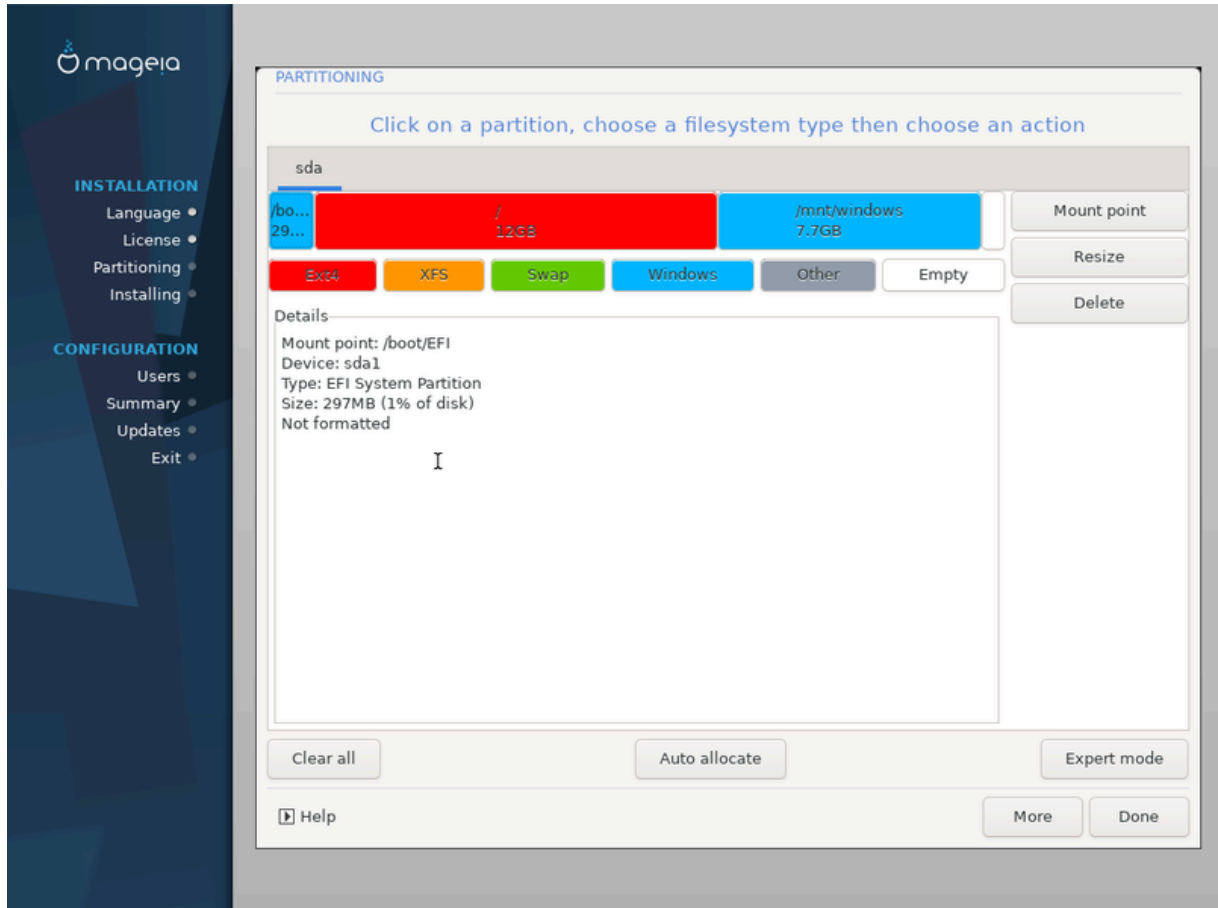


Figure 1. EFI System Partition

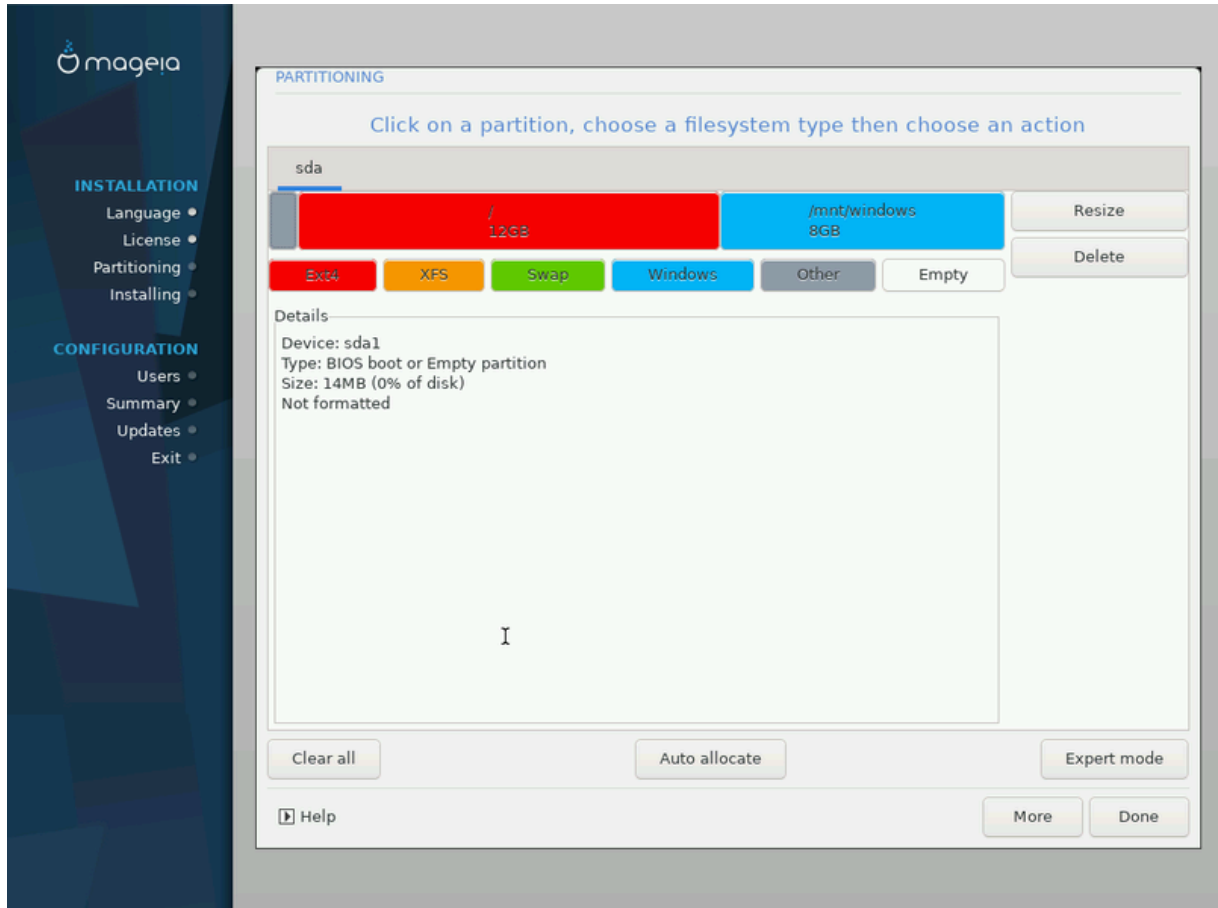
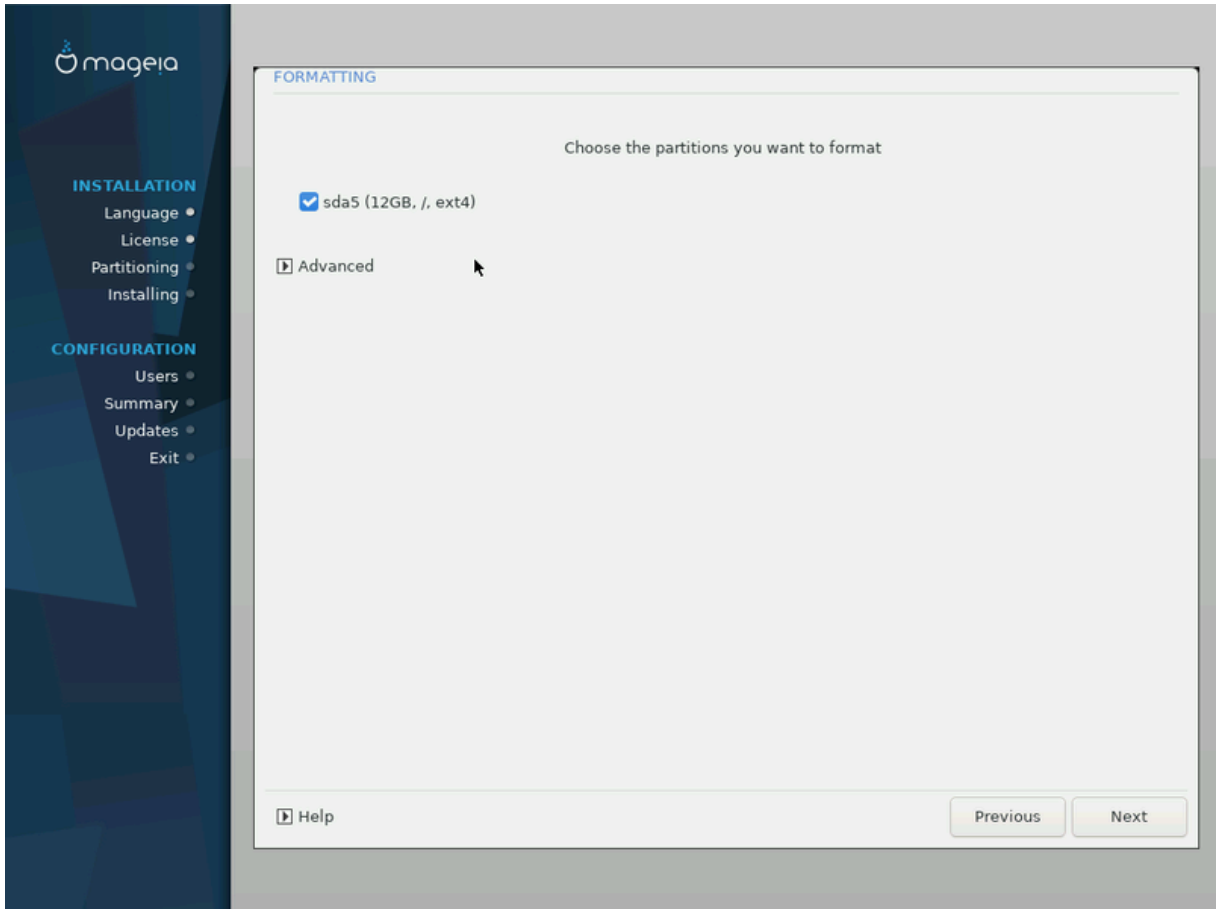


Figure 2. BIOS boot partition

10.5. Formatting



Here you can choose which partition(s) you wish to format. Any data on partitions *not* marked for formatting will be preserved.

Usually, at least the partitions that DrakX selected need to be formatted.

Click on *Advanced* to choose the partitions you want to check for so-called *bad blocks*



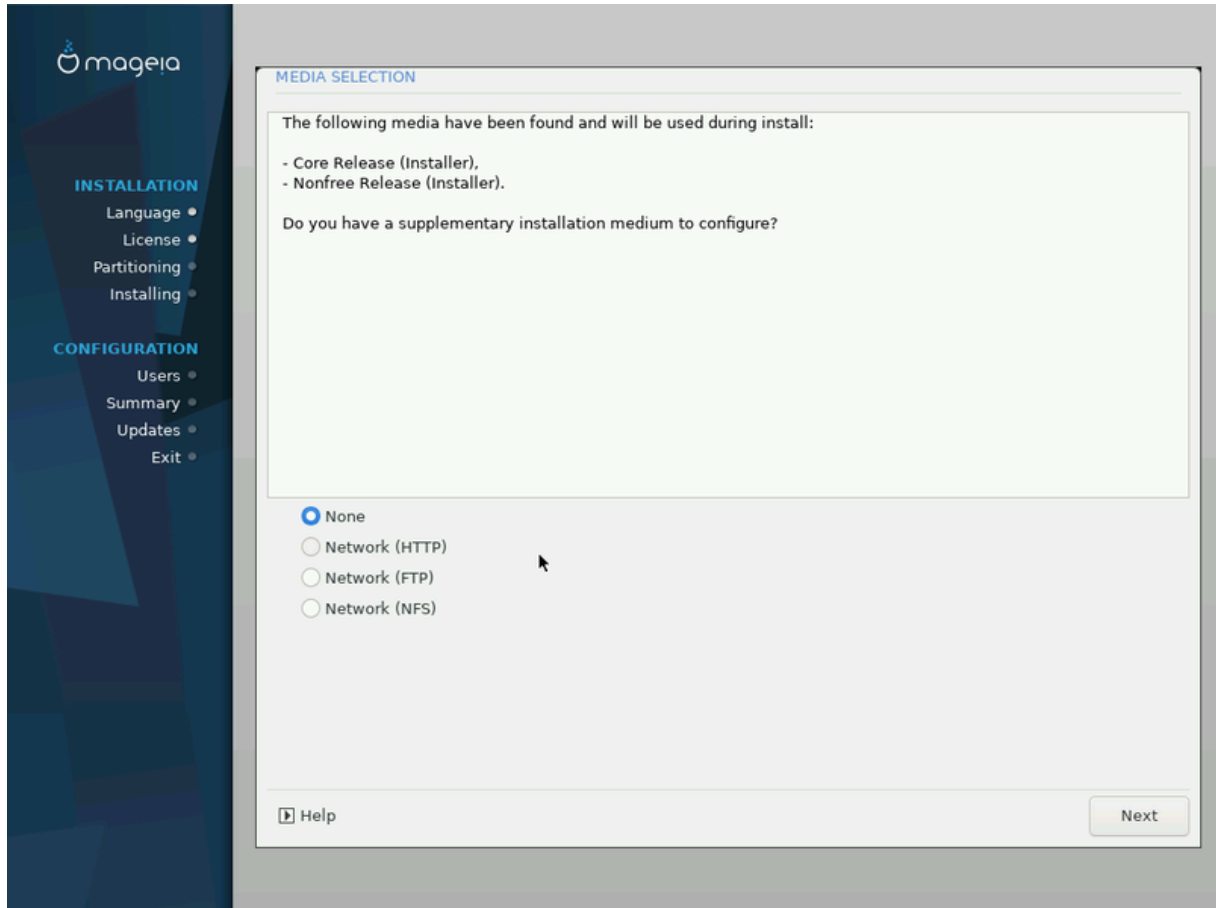
If you're not sure you have made the right choice, you can click on *Previous*, again on *Previous* and then on *Custom* to get back to the main screen, where you can choose to view details of your partitions.

When you are confident about the selections, click on *Next* to continue.

11. Software

11.1. Media Selection

11.1.1. Supplemental Installation Media



This screen shows you the list of already recognised repositories. You can add other sources for packages, like an optical-disc or a remote source. The source selection determines which packages will be available during the subsequent steps.

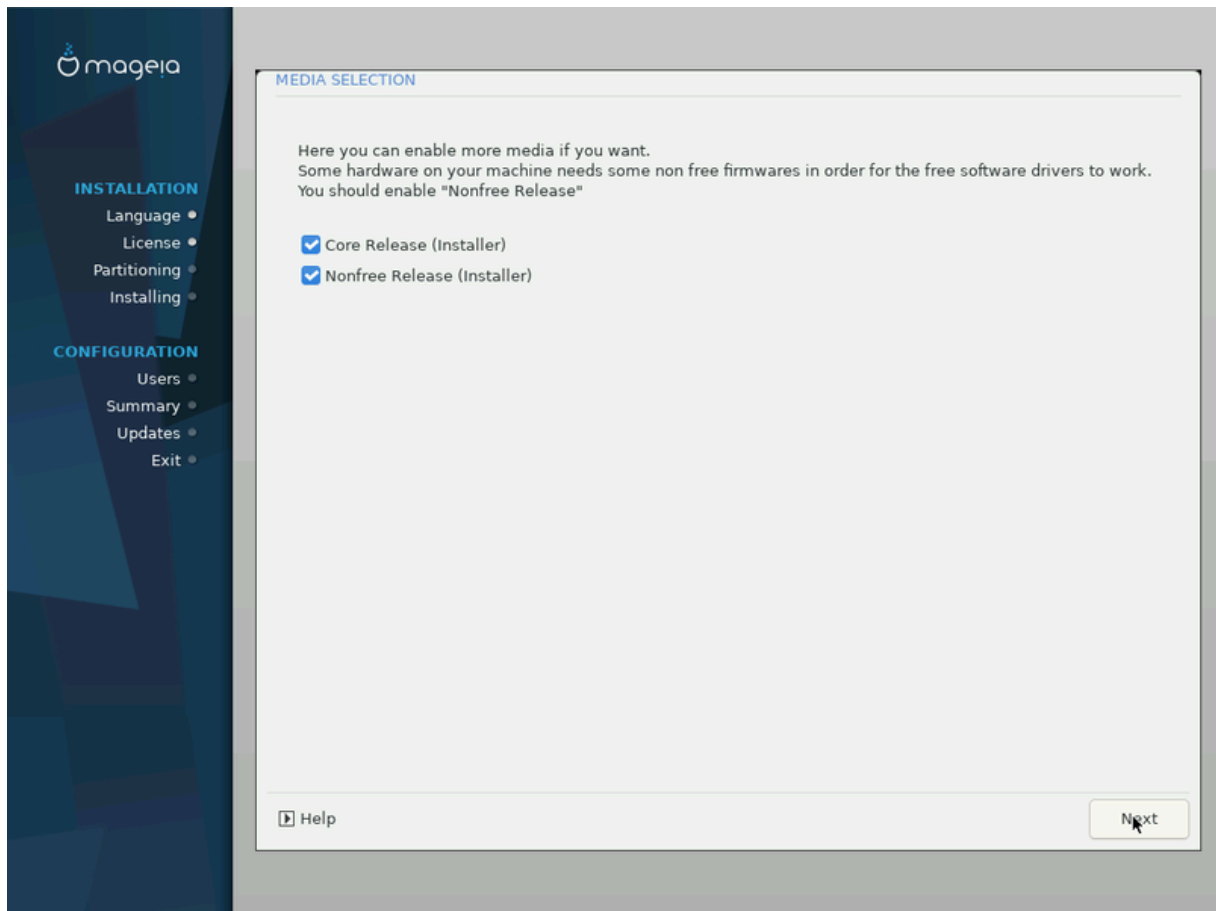
For a network source, there are two steps to follow:

1. Choosing and activating the network, if not already up.
2. Selecting a mirror or specifying a URL (very first entry). By selecting a mirror, you have access to the selection of all repositories managed by Mageia, like the *Nonfree*, the *Tainted* repositories and the *Updates*. With the URL, you can designate a specific repository or your own NFS installation.



If you are updating a 64-bit installation which may contain some 32-bit packages, it is advised to use this screen to add an online mirror by selecting one of the Network protocols here. The 64-bit DVD ISO only contains 64-bit and *noarch* packages, it will not be able to update the 32-bit packages. However, after adding an online mirror, the installer will find the needed 32-bit packages there.

11.1.2. Available Media



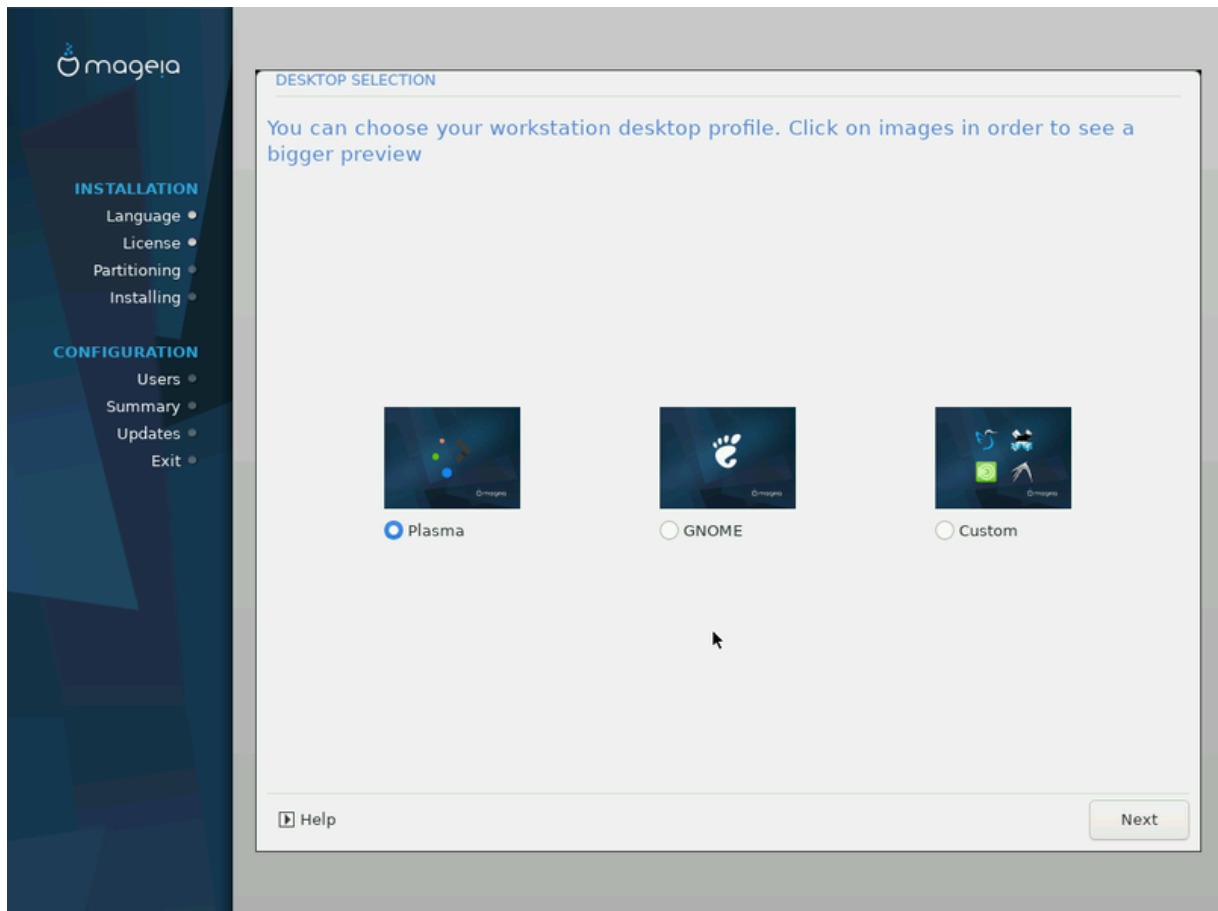
Here you have the list of available repositories. Not all repositories are available, according to which media you use for installing. The repositories selection determines which packages will be available for selection during the next steps.

- The *Core* repository cannot be disabled as it contains the base of the distribution.
- The *Nonfree* repository includes packages that are free-of-charge, i.e. Mageia may redistribute them, but they contain closed-source software (hence the name - Nonfree). For example this repository includes nVidia and AMD graphics card proprietary drivers, firmware for various WiFi cards, etc.
- The *Tainted* repository includes packages released under a free license. The main criteria for placing packages in this repository is that they may infringe patents and copyright laws in some countries, e.g. multimedia codecs needed to play various audio/video files; packages needed to play commercial video DVD's, etc.

11.2. Desktop Selection

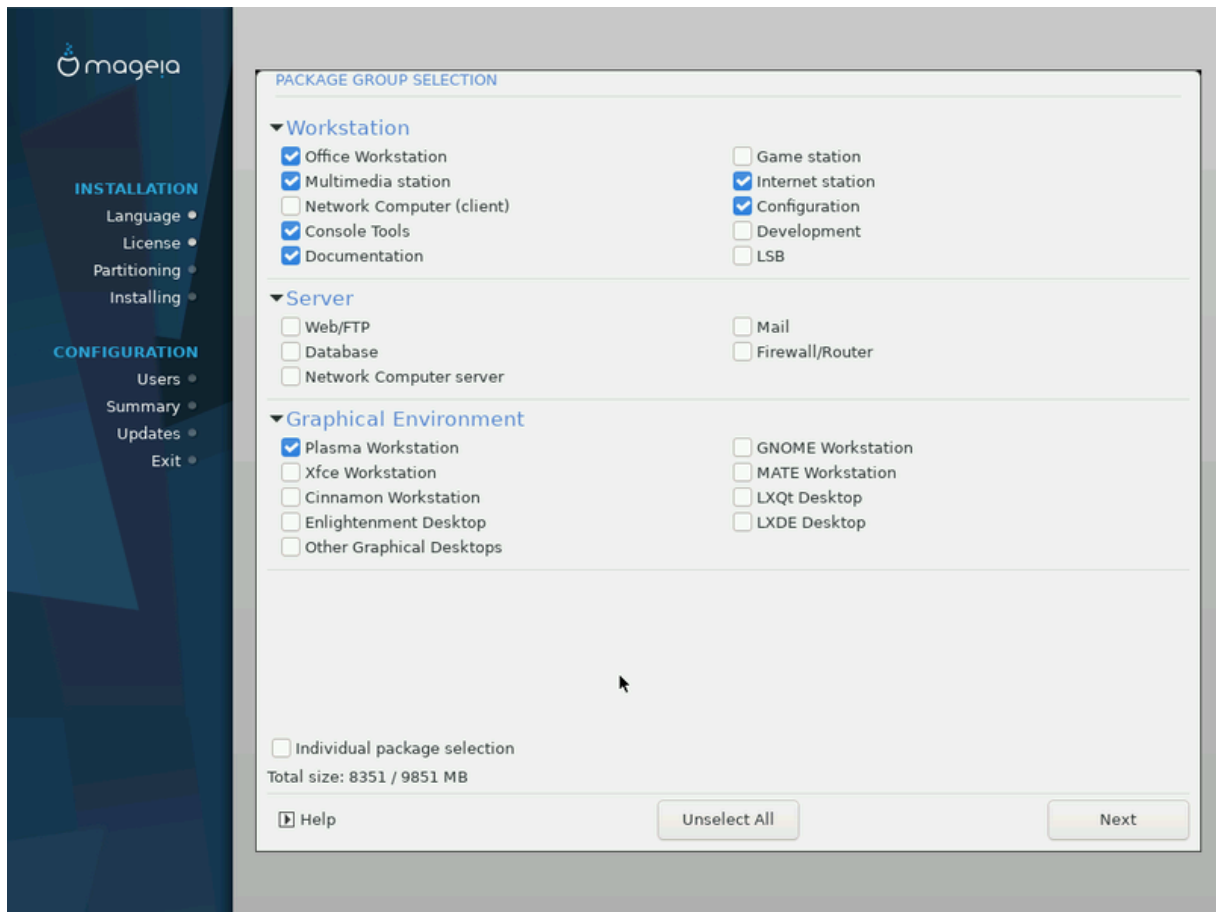
Some choices made here will open other screens with related options.

After the selection step(s), you will see a slideshow during the installation of required packages. The slideshow can be disabled by pressing the *Details* button.



- Choose whether you prefer to use the KDE Plasma or GNOME desktop environment. Both come with a full set of useful applications and tools.
- Select *Custom* if you do not wish to use either (or, actually use both) of these, or if you want to modify the default software choices for these desktop environments. The LXDE desktop, for instance, is lighter than the previous two, sporting less eye candy and having fewer packages installed by default.

11.3. Package Group Selection



Packages are arranged into common groups, to make choosing what you need on your system a lot easier. The groups are fairly self explanatory, however more information about the content of each is available in tool-tips which become visible as the mouse is hovered over them.

- **Workstation**
- **Server**
- **Graphical Environment**
- **Individual Package Selection:** you can use this option to manually add or remove packages

See [Minimal Install](#) for instructions on how to do a minimal install (without or with X & IceWM).

11.4. Minimal Install

Minimal Installation is intended for those with specific uses in mind for Mageia, such as a server or a specialised workstation. You will probably use this option combined with the *Individual package selection* option to fine-tune your installation. See [Choose Packages Tree](#).

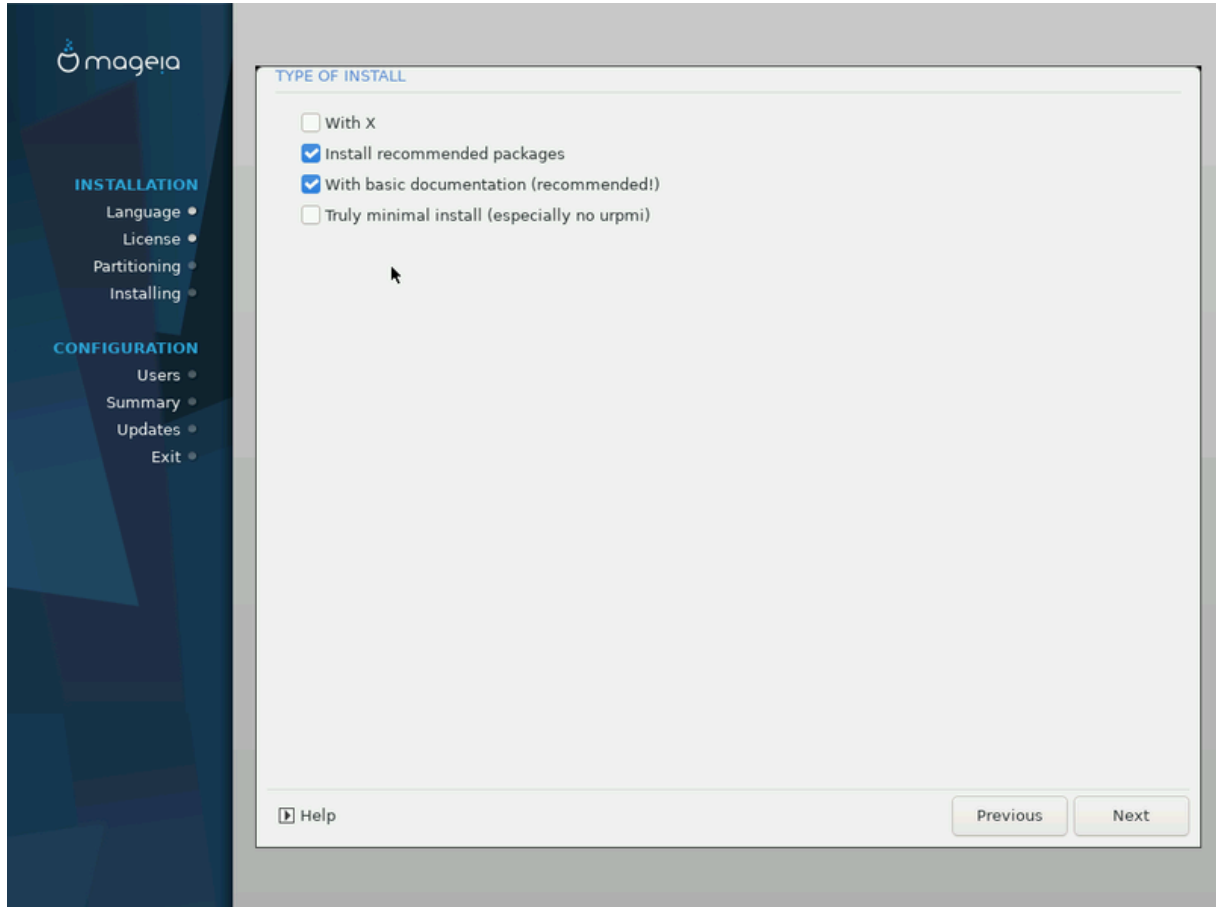
- You can choose a *Minimal Installation* by de-selecting everything in the *Package Group Selection* screen, see [Choose Package Groups](#).

If desired, you can additionally tick the *Individual package selection* option in the same screen.

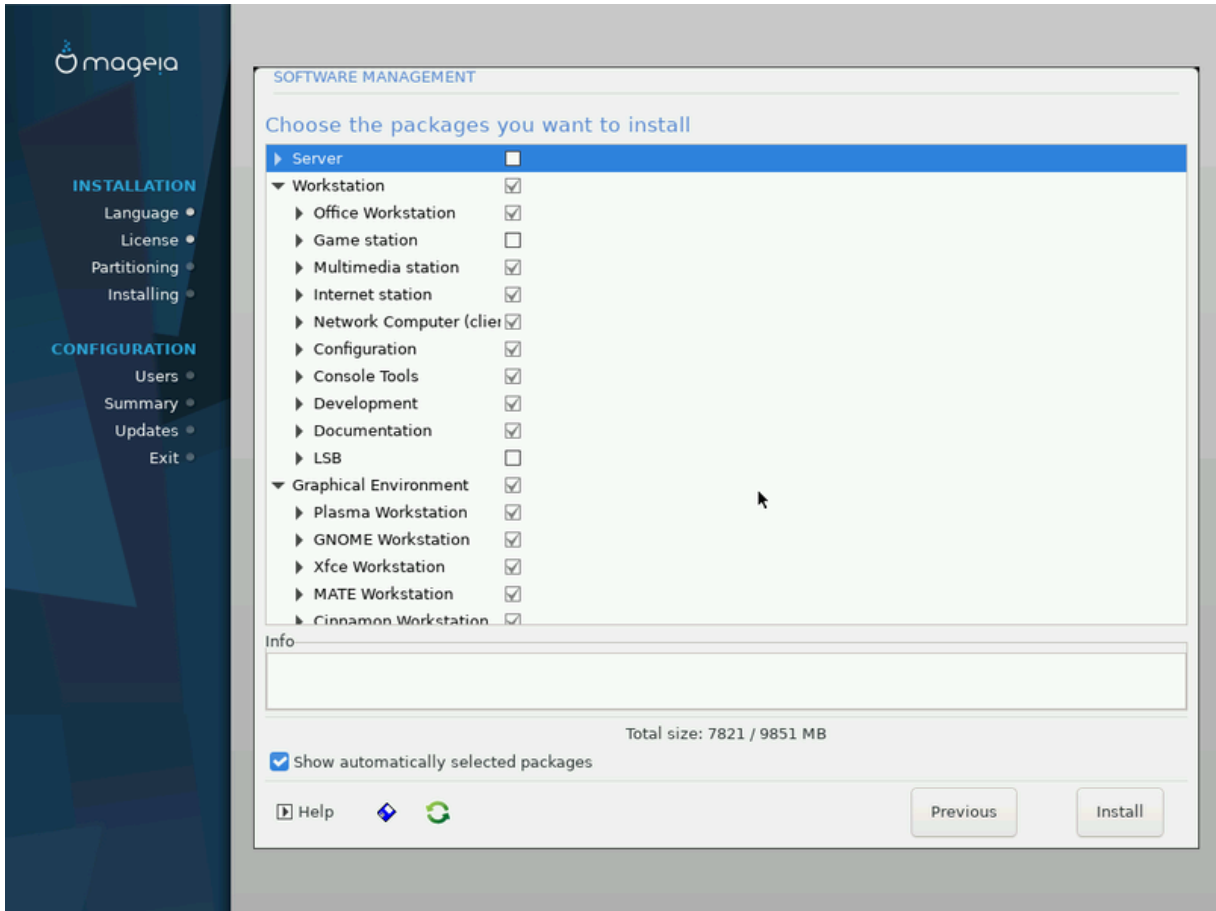
- If you choose this installation method, then the relevant screen (see screenshot below) will offer you a few useful extras to install, such as documentation and “X”.

If the *With X* option is selected, then IceWM (a lightweight desktop environment) will also be included.

The basic documentation is provided in the form of “man” and “info” pages. It contains the man pages from the [Linux Documentation Project](http://www.tldp.org/manpages/man.html) [http://www.tldp.org/manpages/man.html] and the [GNU coreutils](http://www.gnu.org/software/coreutils/manual/) [http://www.gnu.org/software/coreutils/manual/] info pages.



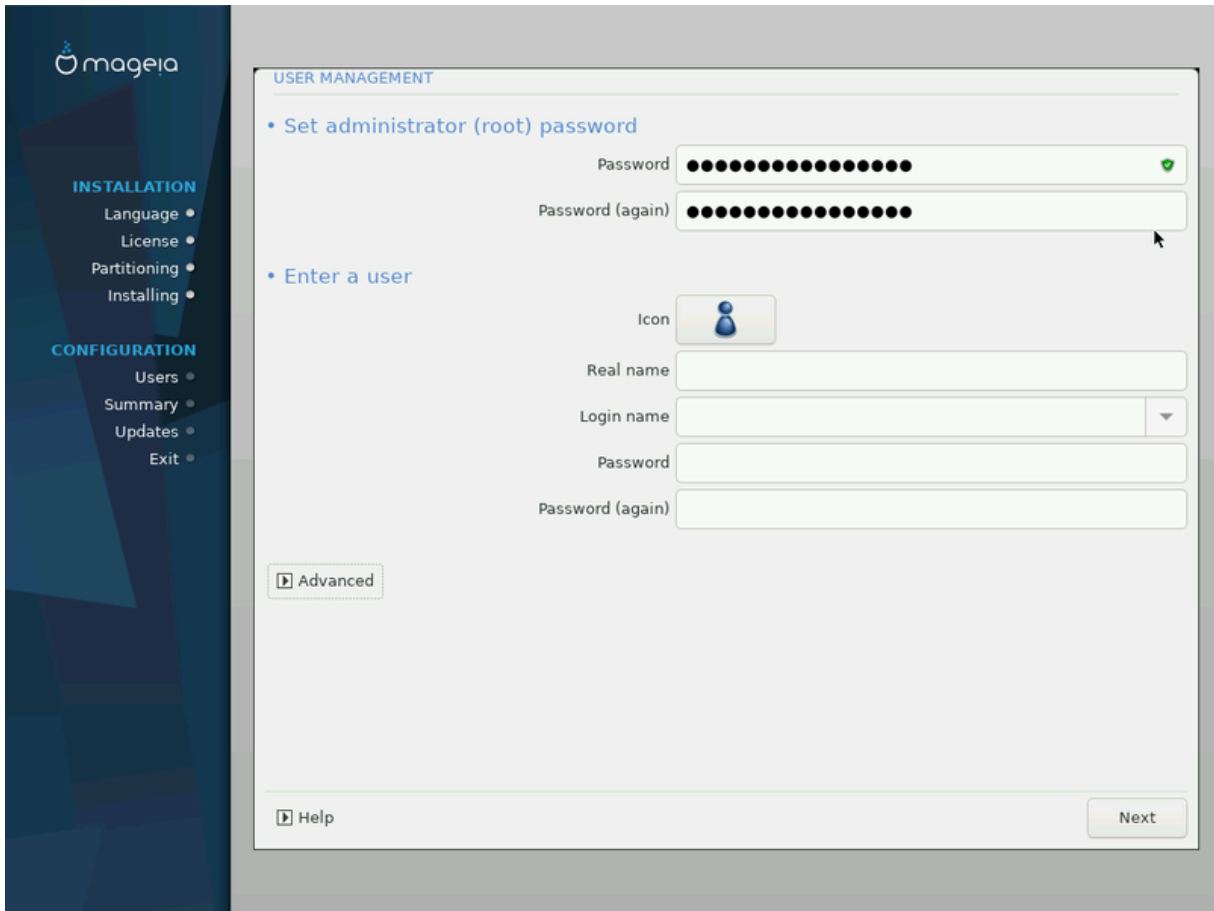
11.5. Choose Individual Packages



Here you can add or remove any extra packages to customize your installation.

After having made your choice, you can click on the *floppy* icon at the bottom of the page to save your choice of packages (saving to a USB key works, too). You can then use this file to install the same packages on another system, by pressing the same button during install and choosing to load it.

12. User Management



12.1. Set Administrator (root) Password:

It is advisable for all Mageia installations to set a `superuser` (Administrator) password, usually called the `root` password in Linux. You need to repeat the same password in the box underneath, to check that the first entry was not mistyped.



As you type a password into the top box a shield will change from red-to-yellow-to-green depending on the strength of the password. A green shield shows you are using a strong password.

All passwords are case-sensitive. It is best to use a mixture of letters (upper and lower case), numbers and other characters in a password.

12.2. Enter a user

Add a User here. A regular user has fewer privileges than the `superuser` (`root`), but enough to use the Internet, office applications or play games and anything else the average user might use a computer for.

- **Icon**

Click on this button if you want to change the user's icon

- **Real Name**

Insert the user's real name into this text box

- **Login Name**

Enter the user login name or let DrakX use a version of the user's real name. **The login name is case-sensitive.**

- **Password**

Type in the user password (remembering the advice in the Note above).

Password (again): Retype the user password. DrakX will check that you have not mistyped the password.



Any users added while installing Mageia, will have a home directory that is both read and write protected (umask=0027)

You can add any extra needed users in the *Configuration - Summary* step during the install. Choose *User management*.

The access permissions can also be changed after the install.

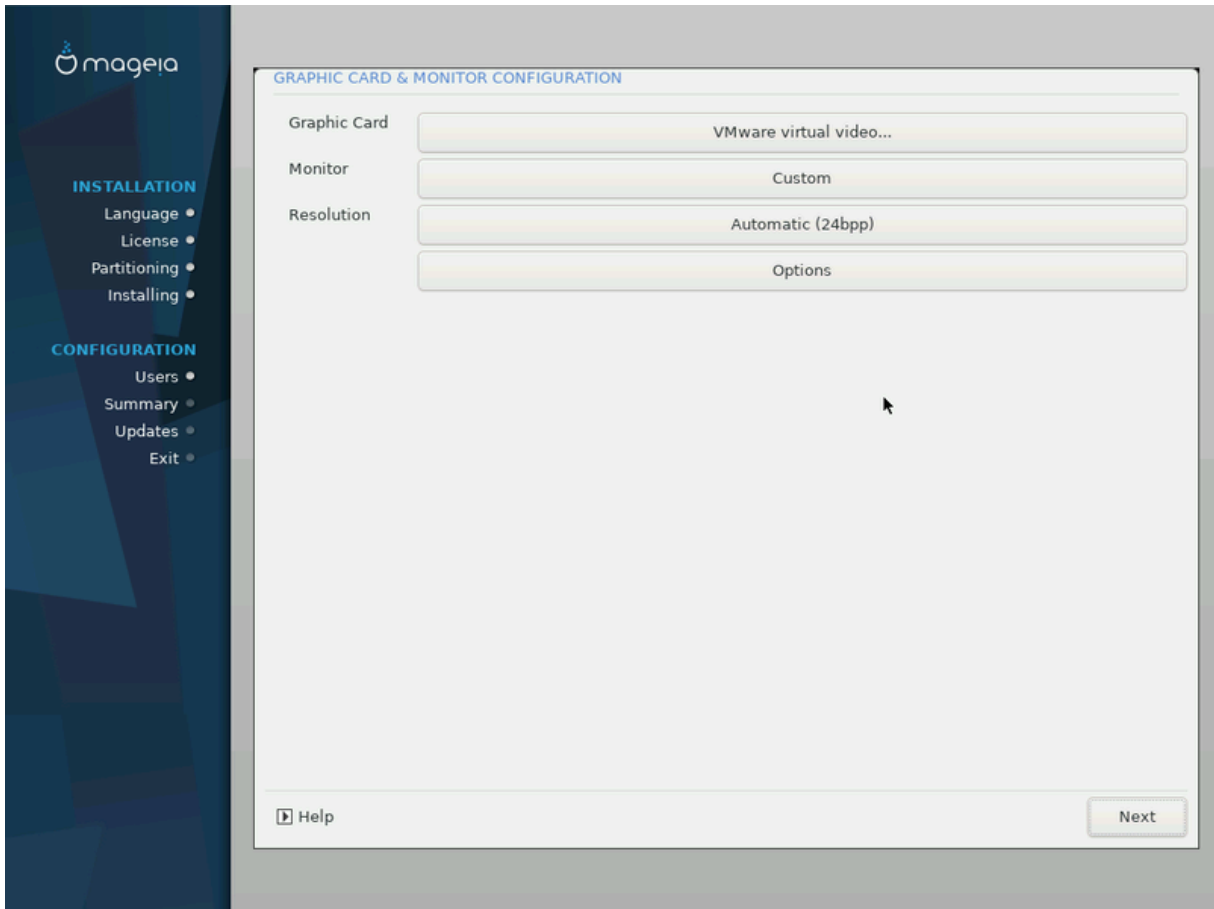
12.3. User Management (advanced)

The *Advanced* option allows you to edit further settings for the user you are adding.

- *Shell*: This drop-down list allows you to change the shell available to any user you added in the previous screen. Options are **Bash**, **Dash** and **Sh**
- *User ID*: Here you can set the user ID for any user you added in the previous screen. If you are unsure what the purpose of this is, then leave it blank.
- *Group ID*: This lets you set the group ID. Again, if unsure, leave it blank.

13. Graphical Configuration

13.1. Graphics Card and Monitor Configuration



No matter which graphical environment (also known as desktop environment) you chose for this install of Mageia, they are all based on a graphical user interface system called **X Window System**, or simply “X”. So in order for KDE Plasma, GNOME, LXDE or any other graphical environment to work well, the following “X” settings need to be correct.

Choose the appropriate settings manually if you think the details are incorrect, or if none are shown.

- **Graphics Card**

If you need to, you can select a specific card from this expandable list. See [Choose an X Server \(Configure your Graphic Card\)](#).

- **Monitor**

You can choose Plug 'n Play, if applicable, or choose your monitor from the *Vendor* or *Generic* lists. Choose *Custom* if you prefer to manually set the horizontal and vertical refresh rates of your monitor. See [Choosing your Monitor](#).

- **Resolution**

The resolution and color depth of your monitor can be set here.

- **Test**

The test button does not always appear during install. If the option is there, and you test your settings, you should be asked to confirm that your settings are correct. If you answer *Yes*, the settings will be kept. If you

don't see anything, you'll return to the configuration screen and be able to reconfigure everything until the test result is satisfactory. If the test option is not available, then make sure your settings are on the safe side.

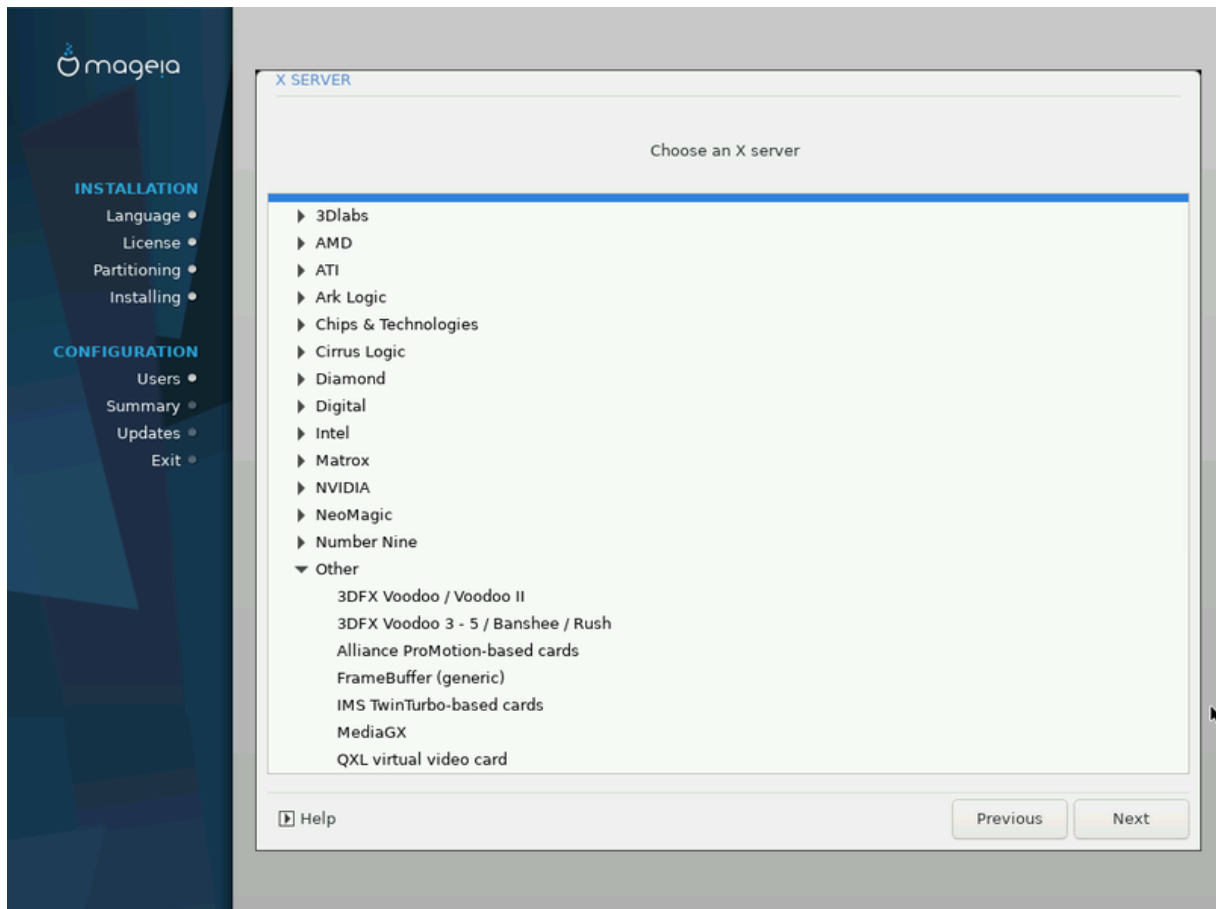
- **Options**

Here you can choose to enable or disable various options.



There is a risk of damaging a monitor if you choose refresh rates that are outside the frequency range of that monitor. This applies to older CRT displays: modern monitors will reject an unsupported frequency and normally enter standby mode.

13.2. Choose an X Server (Configure your Graphic Card)



DrakX has a very comprehensive database of video cards and will usually correctly identify your video device.

If the installer has not correctly detected your graphic card and you know which one you have, you can select it from the tree by:

- Vendor
- then the make of your card
- and the model of card

If you cannot find your card in the vendor lists (because it's not yet in the database or it's an older card) you may find a suitable driver in the *Xorg* category, which provides more than 40 generic and open source video card drivers. If you still can't find a specific driver for your card there is the option of using the VESA driver which provides basic capabilities.



Be aware that if you select an incompatible driver you may only have access to the *Command Line Interface*

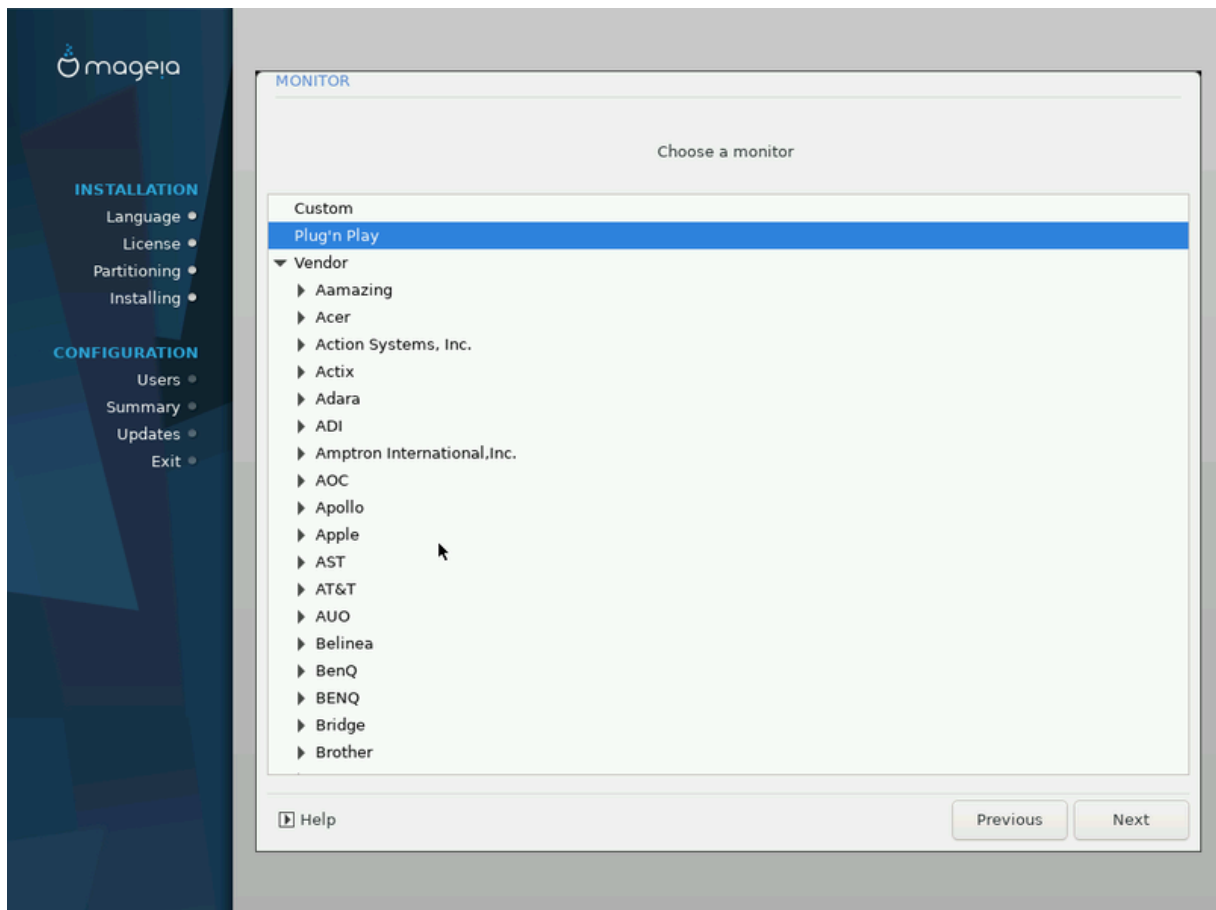
Some video card manufacturers provide proprietary drivers for Linux which may only be available in the *Nonfree* repository and in some cases only from the card manufacturers' websites. The *Nonfree* repository needs to be explicitly enabled to access them. If you didn't enable it previously, you should do this after your first reboot.

13.3. Choosing your Monitor

DrakX has a very comprehensive database of monitors and will usually correctly identify yours.



Selecting a monitor with different characteristics could damage your monitor or video hardware. Please don't try something without knowing what you are doing. If in doubt you should consult your monitor documentation.



Custom

This option allows you to set two critical parameters: the vertical refresh rate and the horizontal sync rate. Vertical refresh determines how often the screen is refreshed and horizontal sync is the rate at which scan lines are displayed.

It is *VERY IMPORTANT* that you do not specify a monitor type with a sync range that is beyond the capabilities of your monitor: you may damage your monitor. If in doubt, choose a conservative setting and consult your monitor documentation.

- Plug'n Play This is the default option and automatically tries to determine the monitor type from the monitor database.
- Vendor If the installer has not correctly detected your monitor and you know which one you have, you can choose it from the options by selecting:
- Manufacturer
 - Monitor model
- Generic Selecting this group will list approximately 30 display configurations such as 1024x768 @ 60Hz and includes flat-panel displays as used in laptops. This is often a good monitor selection group if you need to use the VESA card driver when your video hardware cannot be determined automatically. Once again, it may be wise to be conservative in your selections.

14. Bootloader

14.1. Available Bootloaders

14.1.1. Grub2

Grub2 on Legacy MBR/GPT systems

- GRUB2 (with or without graphical menu) will be used exclusively as the bootloader for a Legacy/MBR or Legacy/GPT system.
- By default, a new bootloader will be written into either the MBR (Master Boot Record) of your first hard drive or in the BIOS boot partition.

Grub2-efi on UEFI systems

- GRUB2-efi or rEFInd may be used as the bootloader for a UEFI system.
- By default, a new bootloader (Grub2-efi) will be written into the ESP (EFI System Partition).

If there are already UEFI-based operating systems installed on your computer (Windows 8 for example), the Mageia installer will detect the existing ESP created by Windows and add grub2-efi to it. If no ESP exists, then one will be created. Although it is possible to have several ESPs, only one is required, whatever the number of operating systems you have.

14.1.2. rEFInd

rEFInd on UEFI systems

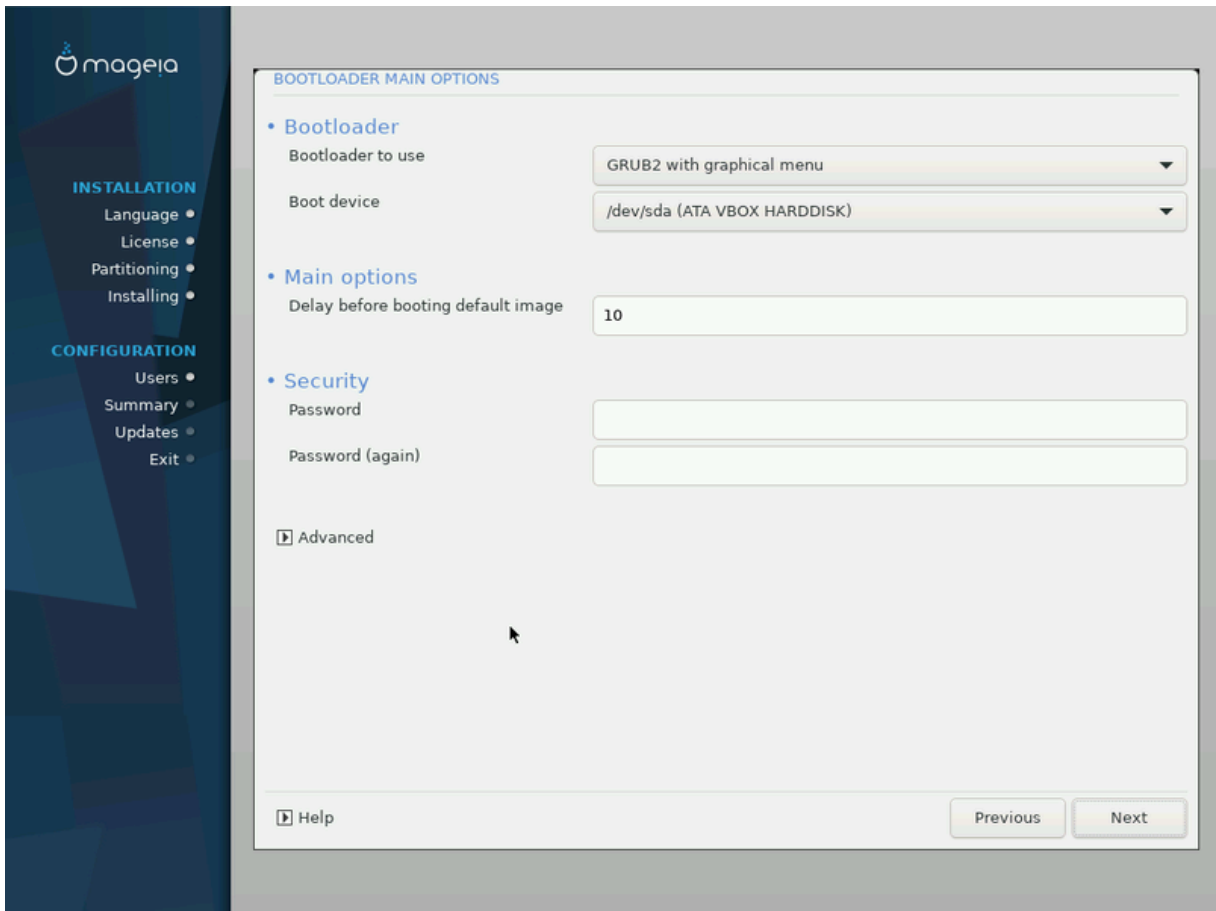
- rEFInd has a nice graphical set of options, and can auto-detect installed EFI bootloaders. See: <http://www.rodsbooks.com/refind/>



Please note that in order to be able to use the rEFInd option, an installed EFI System Partition must match your system architecture: if you have a 32bit EFI System Partition installed on a 64bit machine for instance, then the rEFInd option will not be displayed/available to you.

14.2. Bootloader Setup

14.2.1. Bootloader main options



- **Bootloader to use**
 - GRUB2 (with either a graphical or a text menu), can be chosen for both Legacy MBR/BIOS systems and UEFI systems.
 - rEFInd (with a graphical menu) is an alternative option solely for use with UEFI systems.
- **Boot device**



Don't change this unless you really know what you are doing.



There is no option to write GRUB to the boot sector of a partition (e.g: sda1), as this method is considered unreliable.

When using UEFI mode, then the Boot device will be listed as EFI System Partition.

- **Delay before booting the default image**

This text box lets you set a delay, in seconds, before the default operating system is started up.

- **Security**

This allows you to set a password for the bootloader. This means a username and password will be required when booting in order to select a booting entry or change settings. This is optional, and most people are not likely to have a need for it. The username is `root` and the password is the one chosen hereafter.

- **Password**

Choose a password for the bootloader (optional)

- **Password (again)**

Retype the password and DrakX will check that it matches with the one set above

Advanced

- *Enable ACPI*

ACPI (Advanced Configuration and Power Interface) is a standard for power management. It can save energy by stopping unused devices. Deselecting it could be useful if, for example, your computer does not support ACPI or if you think the ACPI implementation might cause some problems (for instance random reboots or system lockups).

- *Enable SMP*

This option enables/disables symmetric multiprocessing for multi-core processors

- *Enable APIC*

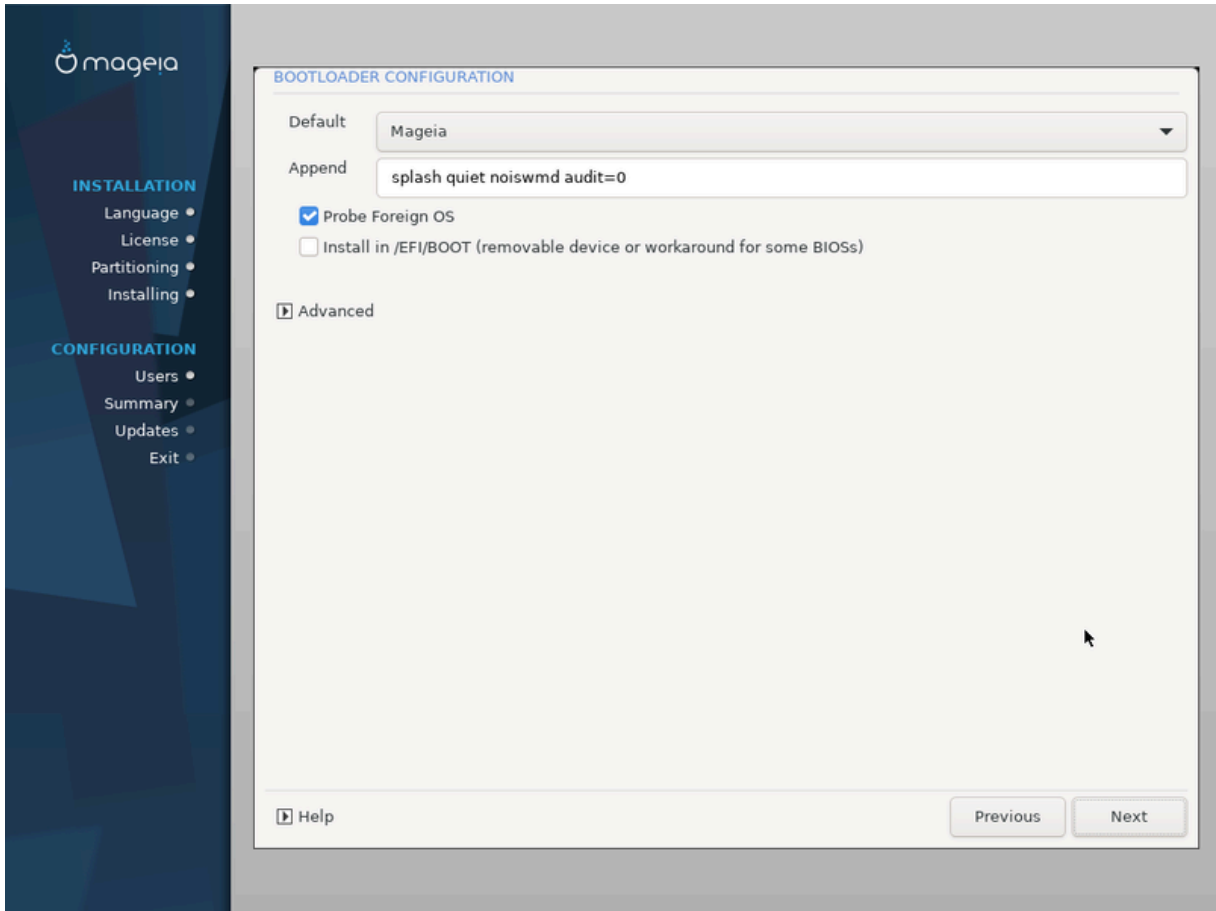
Enabling this gives the operating system access to the Advanced Programmable Interrupt Controller. APIC devices permit more complex priority models, and Advanced IRQ (Interrupt Request) management.

- *Enable Local APIC*

Here you can set Local APIC, which manages all external interrupts for a specific processor in an SMP system

14.2.2. Bootloader Configuration

If, in the previous section you selected `rEFInd` as the bootloader to use, you would then be presented with the options shown in the screenshot directly below. Otherwise, please instead move on to the subsequent screenshot for your options.



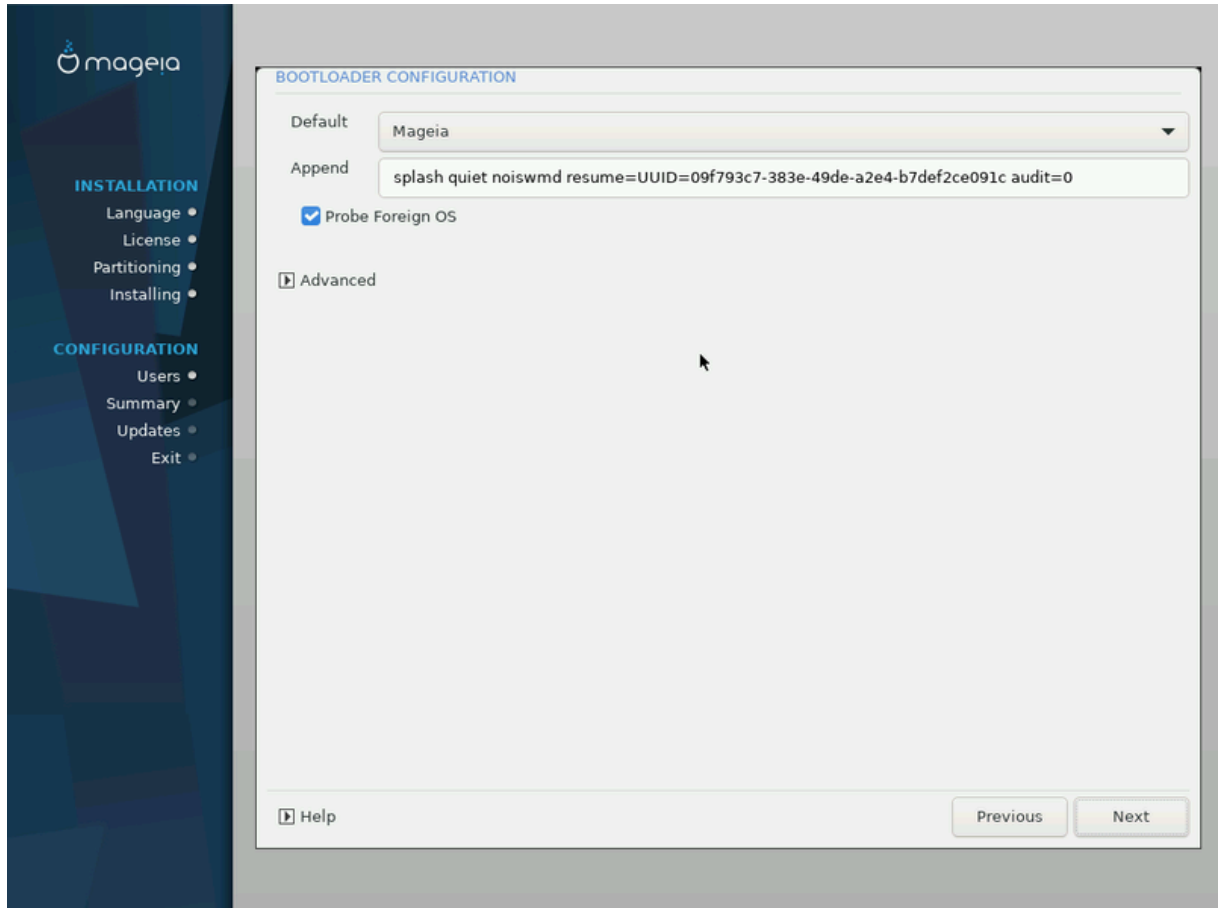
Your rEFInd configuration options:

- **Install or update rEFInd in the EFI system partition.**
- **Install in /EFI/BOOT.**

This option installs the bootloader in the /EFI/BOOT directory of the ESP (EFI System Partition). This can be useful when:

- (a) Installing onto a removable drive (e.g. a USB stick) that can be removed and plugged into a different machine. If the bootloader is stored in /EFI/BOOT, UEFI BIOS's will detect it and allow you to boot from that drive.
- (b) As a workaround where, due to a buggy UEFI BIOS, the newly written bootloader for Mageia will not be recognized at end of the installation.

If you did not select rEFInd as the bootloader to use in the previous section, then your bootloader configuration options are shown below:



- **Default**

The operating system to be started up by default.

- **Append**

This option lets you pass information to the kernel or tell the kernel to give you more information as it boots.

- **Probe foreign OS**

If you already have other operating systems installed, Mageia attempts to add them to your new Mageia boot menu. If you don't want this behaviour, then untick the Probe Foreign OS option.

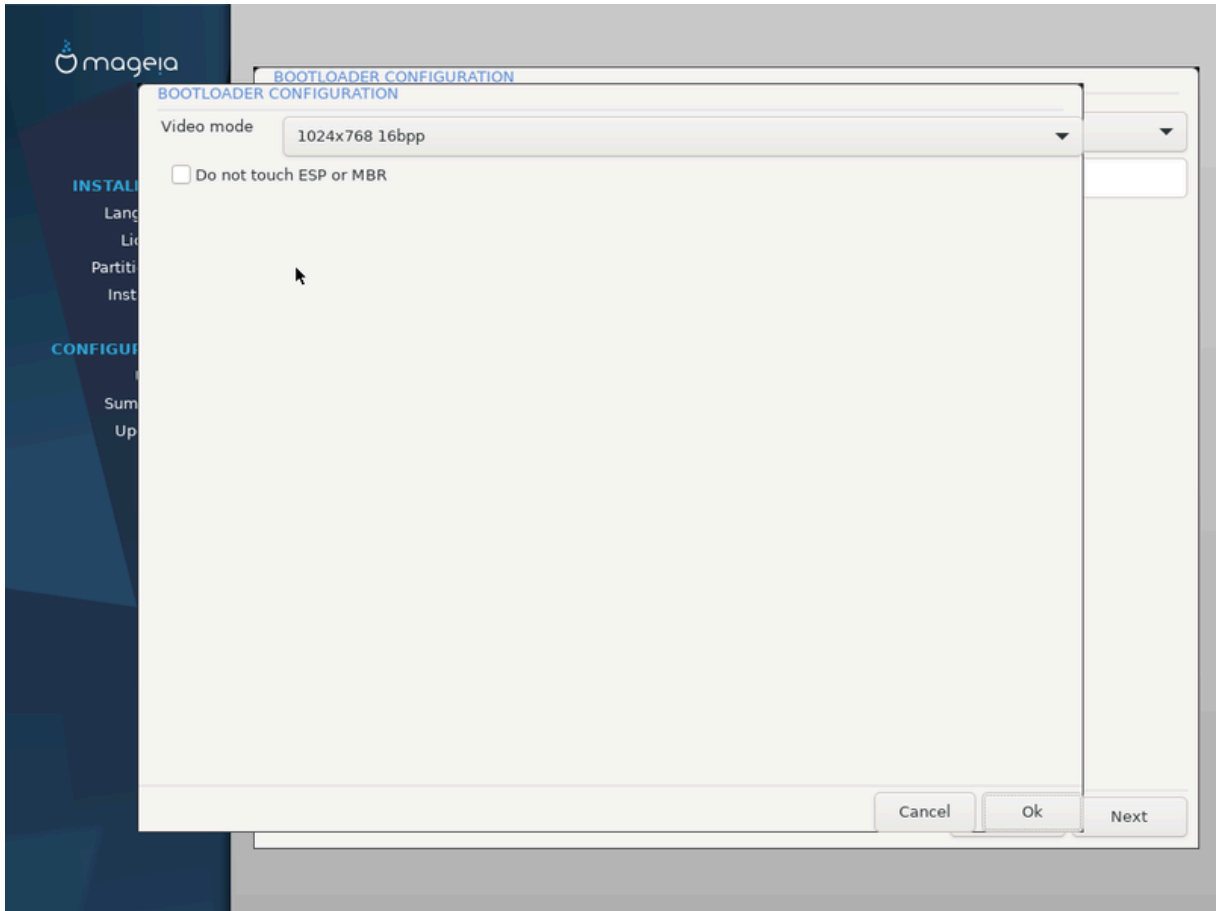
- **Install in /EFI/BOOT.** (Note: this menu option only becomes available where the installer detects that a machine is in UEFI mode).

This option installs the bootloader in the /EFI/BOOT directory of the ESP (EFI System Partition). This can be useful when:

(a) Installing onto a removable drive (e.g. a USB stick) that can be removed and plugged into a different machine. If the bootloader is stored in /EFI/BOOT, UEFI BIOS's will detect it and allow you to boot from that drive.

(b) As a workaround where, due to a buggy UEFI BIOS, the newly written bootloader for Mageia will not be recognized at end of the installation.

Advanced



- *Video mode*

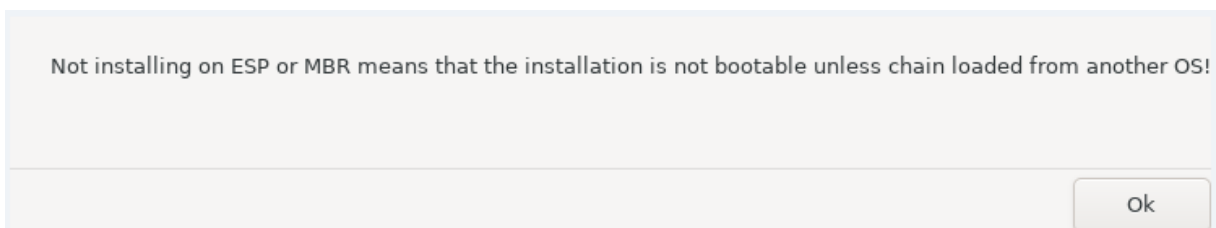
This sets the screen size and colour depth to be used by the boot menu. If you click the down-triangle you will be offered other size and colour depth options.

- *Do not touch ESP or MBR*

Select this option if you don't want a bootable Mageia, but would rather chain-load it from another OS. You will get a warning that the bootloader is missing. Click Ok only if you are sure you understand the implications, and wish to proceed.



Chain-loading via legacy bootloaders (GRUB Legacy and LiLo) is no longer supported by Mageia as it is likely to fail when attempting to boot this resulting installation of Mageia. If you use anything other than GRUB2 or rEFInd for this purpose, then you do so at your own risk!



14.3. Other Options

14.3.1. Using an existing bootloader

The exact procedure for adding Mageia to an existing bootloader is beyond the scope of this documentation. However, in most cases it will involve running the relevant bootloader installation program, which should detect Mageia and automatically add an entry for it in the bootloader menu. See the documentation for the relevant operating system.

14.3.2. Installing Without a Bootloader

While you can opt to install Mageia without a bootloader (see section 2.1 Advanced), this is not recommended unless you absolutely know what you are doing, as without some form of bootloader your operating system will be unable to start.

14.3.3. Add or Modify a Boot Menu Entry

To do this you need to manually edit `/boot/grub2/custom.cfg` or use the software **grub-customizer** tool instead (available in the Mageia repositories).



For more information, see: https://wiki.mageia.org/en/Grub2-efi_and_Mageia

15. Configuration Summary

The screenshot shows the Mageia installation configuration summary screen. On the left is a dark sidebar with the Mageia logo and a menu. The main area is titled 'SUMMARY' and is divided into sections: 'System', 'Hardware', and 'Network & Internet'. Each section contains configuration options with 'Configure' buttons. At the bottom, there are 'Help' and 'Next' buttons.

mageia

INSTALLATION

- Language •
- License •
- Partitioning •
- Installing •

CONFIGURATION

- Users •
- Summary •
- Updates •
- Exit •

SUMMARY

- System**
 - Timezone - Europe/London
 - Country / Region - United Kingdom
 - Bootloader - grub2-graphic on /dev/sda
 - User management
 - Services - 28 activated for 81 registered
- Hardware**
 - Keyboard - UK keyboard
 - Mouse - Universal Any PS/2 & USB mice
 - Sound card - Intel 82801AA,82901AB,i810,i820,i830,i840,i845,MX440; SiS 7012; Ali 5455
 - Graphical interface - Automatic
- Network & Internet**

DrakX presents a proposal for the configuration of your system depending on the choices you made and on the hardware detected. You can check the settings here and change them if you want by pressing *Configure*.



As a general rule, it is recommended that you accept the default settings unless:

- there are known issues with a default setting
 - the default setting has already been tried and it fails
 - some other factor mentioned in the detailed sections below is an issue
-

15.1. System parameters

- **Timezone**

If the time settings you chose before are wrong, you can correct them here. See also [Configure Timezone](#) and [Configure Timezone UTC](#)

- **Country / Region**

If the selected country is wrong, it is very important that you correct the setting. See [Select Country](#)

- **Bootloader**

DrakX proposal for the bootloader setting

Do not change anything, unless you know how to configure GRUB2. For more information, see [Bootloader](#)

- **User management**

You can add extra users here. They will each be allocated their own /home directories.

- **Services**

System services refer to those small programs which run in the background (daemons). This tool allows you to enable or disable certain processes.

You should check carefully before changing anything here - a mistake may prevent your computer from operating correctly. For more information, see [Configure Services](#)

15.2. Hardware parameters

- **Keyboard**

Configure your keyboard layout according to your location, language and type of keyboard.



If you notice a wrong keyboard layout and want to change it, keep in mind that your passwords are going to change too.

- **Mouse**

Here you can add or configure other pointing devices, tablets, trackballs etc.

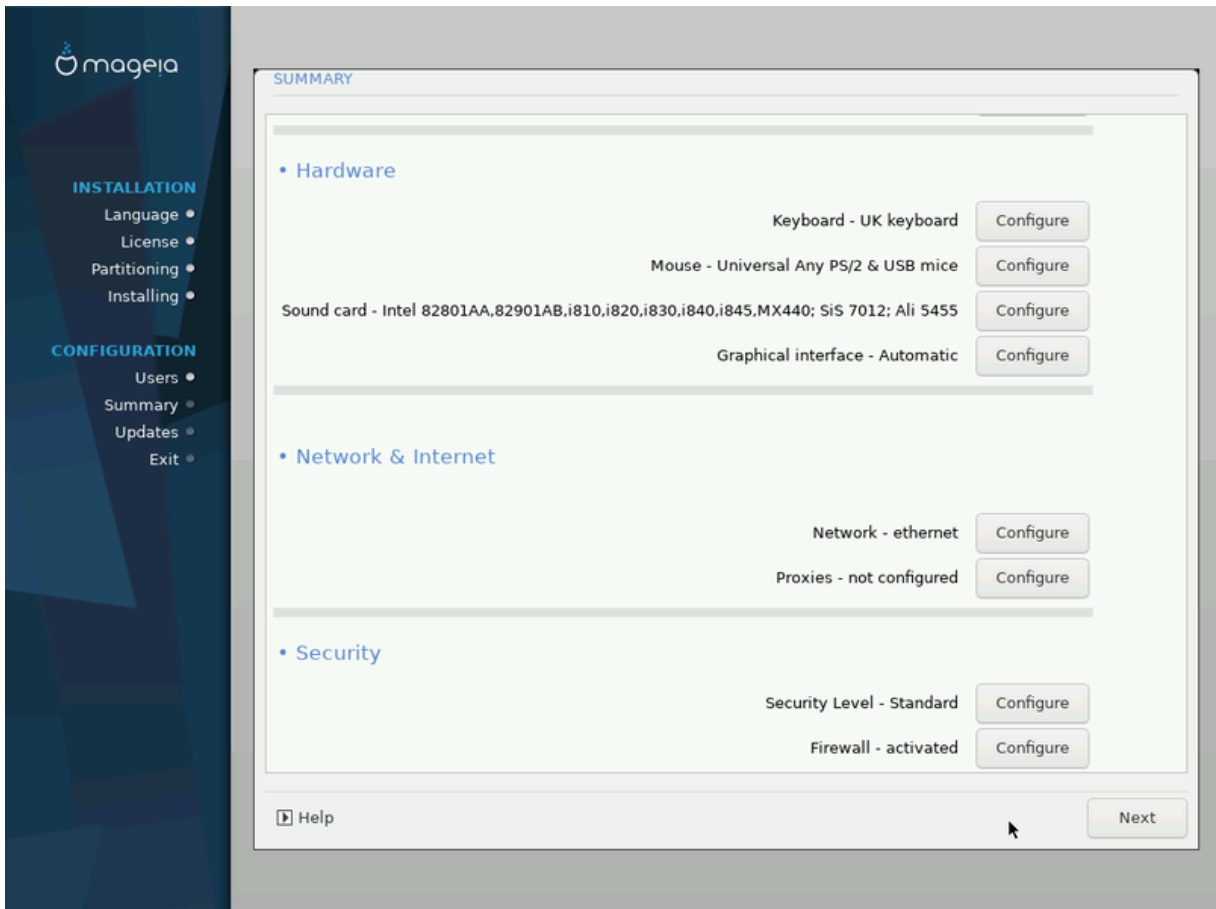
- **Sound card**

The installer will use the default driver if one is available.

If there is no actual default driver for your sound card, there may be other possible alternative drivers available to choose from. If this is the case, but you think the installer has not made the most appropriate choice, you can click on *Advanced* to manually specify a driver.

- **Graphical interface**

This section allows you to configure your graphics cards and displays. For more information, see [Graphics Card and Monitor Configuration](#)



15.3. Network and Internet parameters

- **Network**

You can configure your network here, but for network cards with non-free drivers it is better to do that after reboot, using the Mageia Control Center, if you have not yet enabled the *Nonfree* media repositories.



When you add a network card, do not forget to set your firewall to monitor that interface as well.

- **Proxies**

A Proxy Server acts as an intermediary between your computer and the wider Internet. This section allows you to configure your computer to utilize a proxy service.

You may need to consult your systems administrator to obtain the parameters you need to enter here.

15.4. Security

- **Security Level**

The Security level for your computer, in most cases the default setting (Standard) is adequate for general use. Select the option which best suits your usage.

- **Firewall**

The firewall allows you to manage which network connections are allowed on your computer. The safe and secure default is to allow ZERO inbound connections. This does not stop you connecting outbound and using your computer normally.

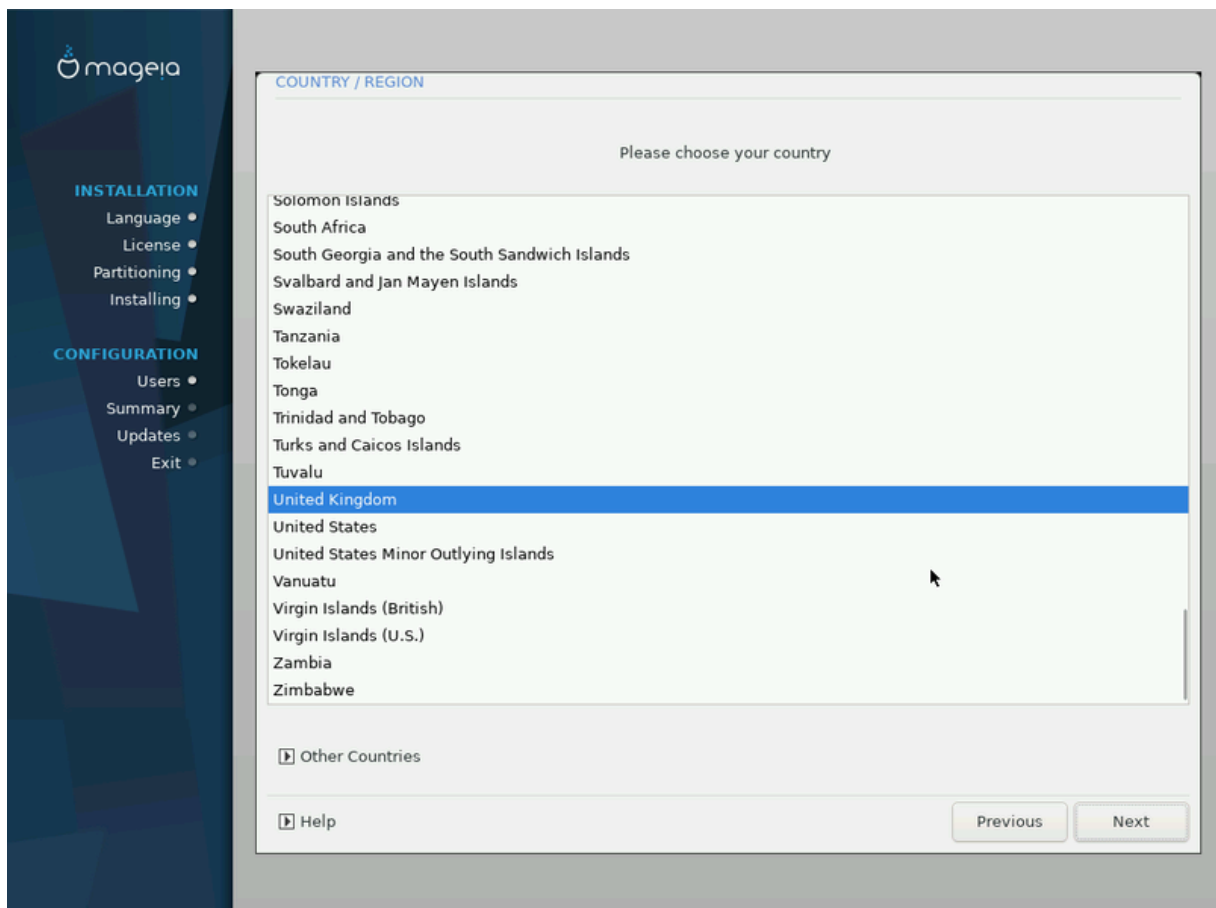
Please be aware that the Internet is a high risk network where there are continuous attempts to probe and attack systems. Even seemingly “safe” connections such as ICMP (for ping) have been used as covert data channels for exfiltrating data by malicious persons.

For more information, see [Firewall](#).



Bear in mind that allowing *everything* (no firewall) may be very risky.

16. Select your Country / Region



- Select your country or region. This is important for all kinds of settings, like the currency and wireless regulatory domain. Setting the wrong country can lead to being unable to use a Wireless network.
- If your country isn't in the list, click the *Other Countries* option and choose your country / region there.



If your country is only in the *Other Countries* list, after clicking *OK* it may seem that a country from the main list was chosen. Despite this, DrakX will actually apply your choice.

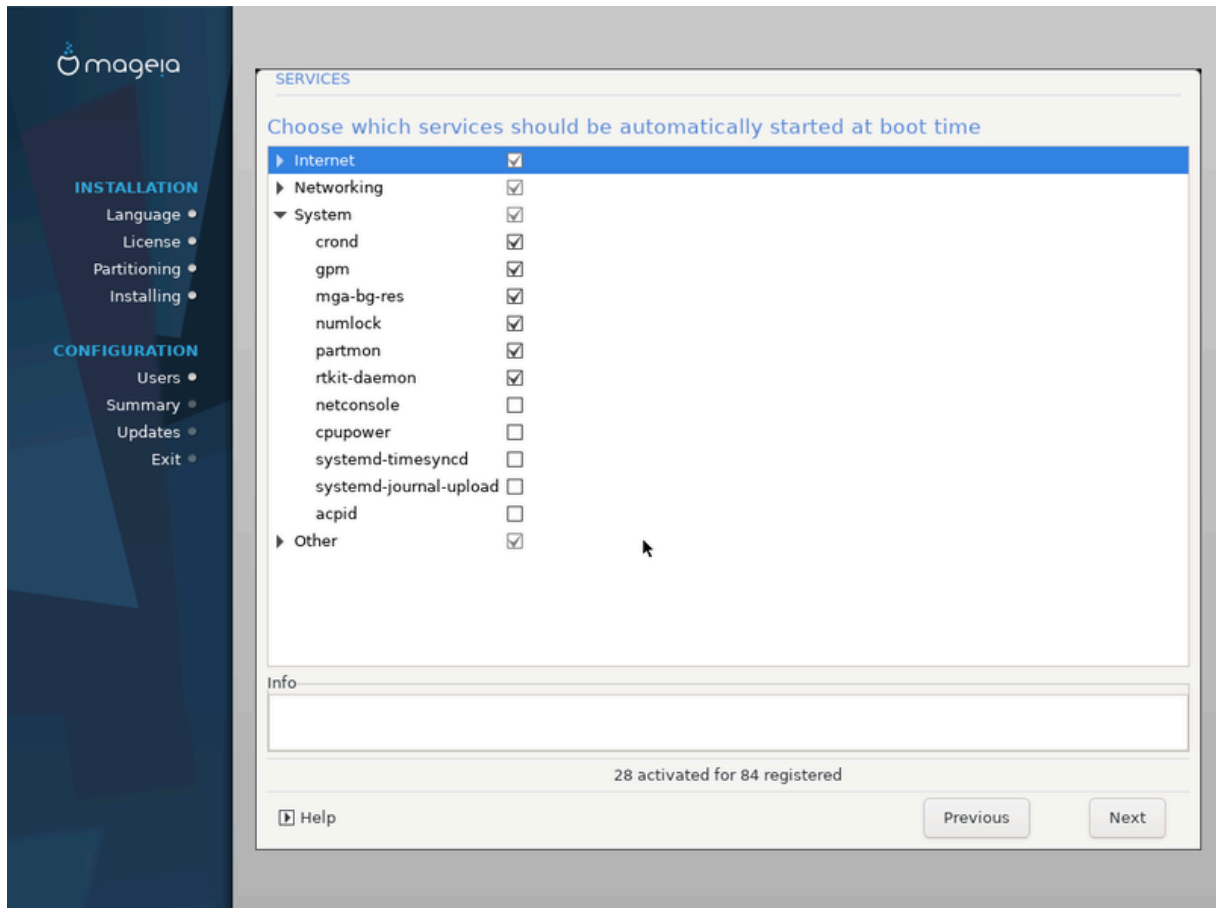
16.1. Input method

In the *Other Countries* screen you can also select an input method (at the bottom of the list). Input methods allow users to input multilingual characters (Chinese, Japanese, Korean, etc). IBus is the default input method, so users should not need to configure it manually. Other input methods (SCIM, GCIN, HIME, etc) also provide similar functions and can be installed if you added HTTP/FTP media before package selection.



If you missed the input method setup during installation, you can access it post-install via Configure your Computer # System, or by running **localedrake** as *root*.

17. Configure your Services

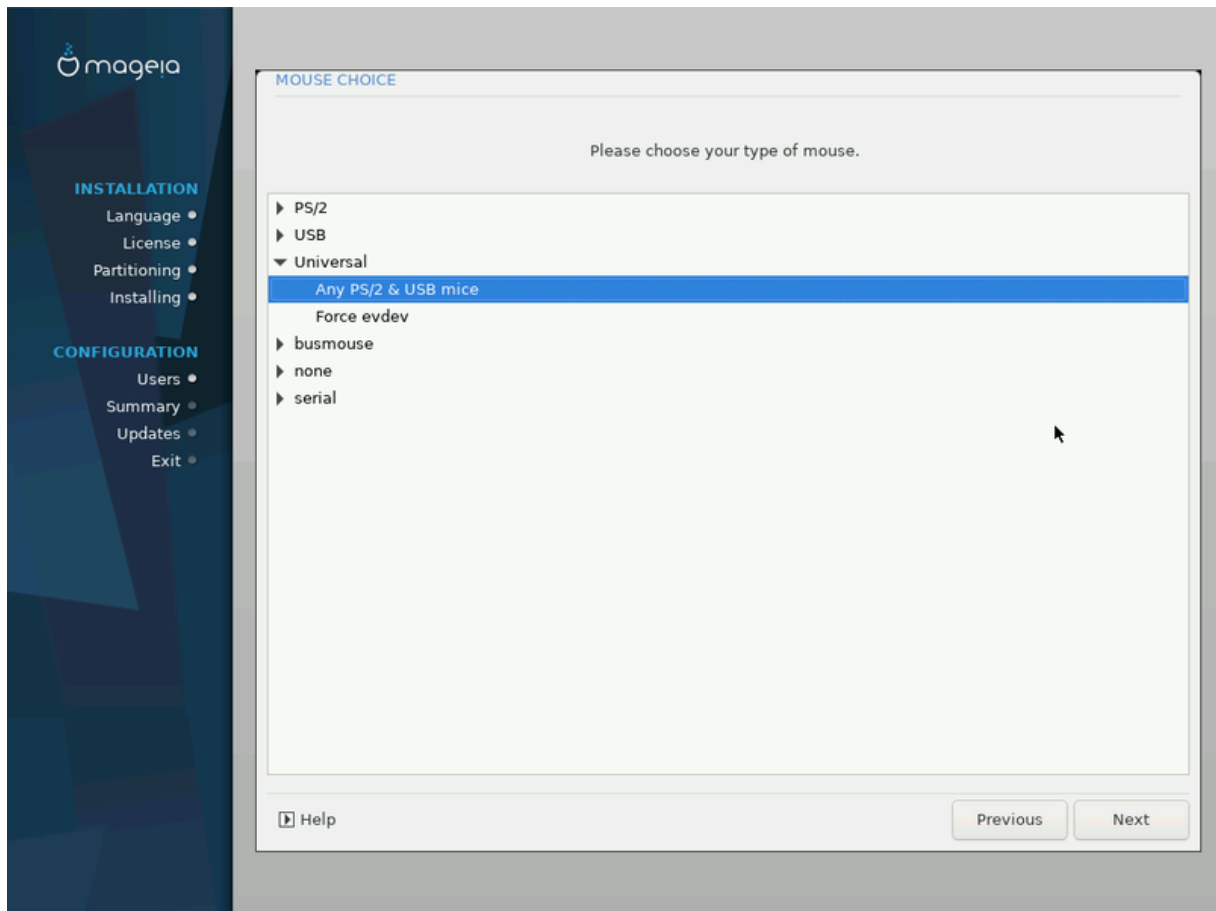


Here you can choose which services should start when you boot your system.

- Click on a triangle to expand a group to all the relevant services. The settings DrakX chose are usually good.
- If you highlight a service, some information about it is shown in the info box below.

Only change things when you know very well what you are doing.

18. Select mouse

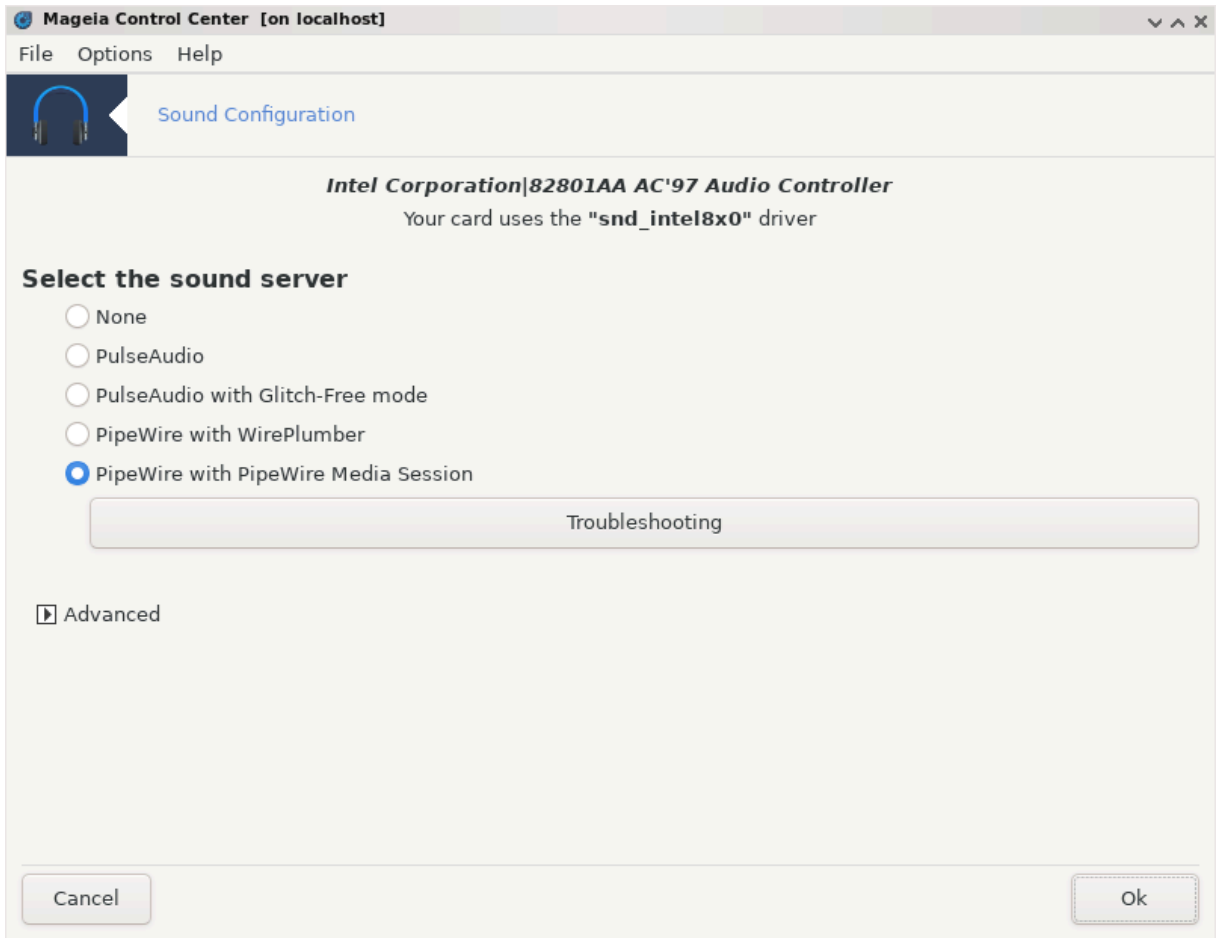


If you are not happy with how your mouse responds, you can select a different one here.

Usually, Universal # Any PS/2 and USB mice is a good choice.

Select Universal # Force evdev to configure the buttons that do not work on a mouse with six or more buttons.

19. Sound Configuration



In this screen the name of the driver that the installer chose for your sound card is given, which will be the default driver if one exists.

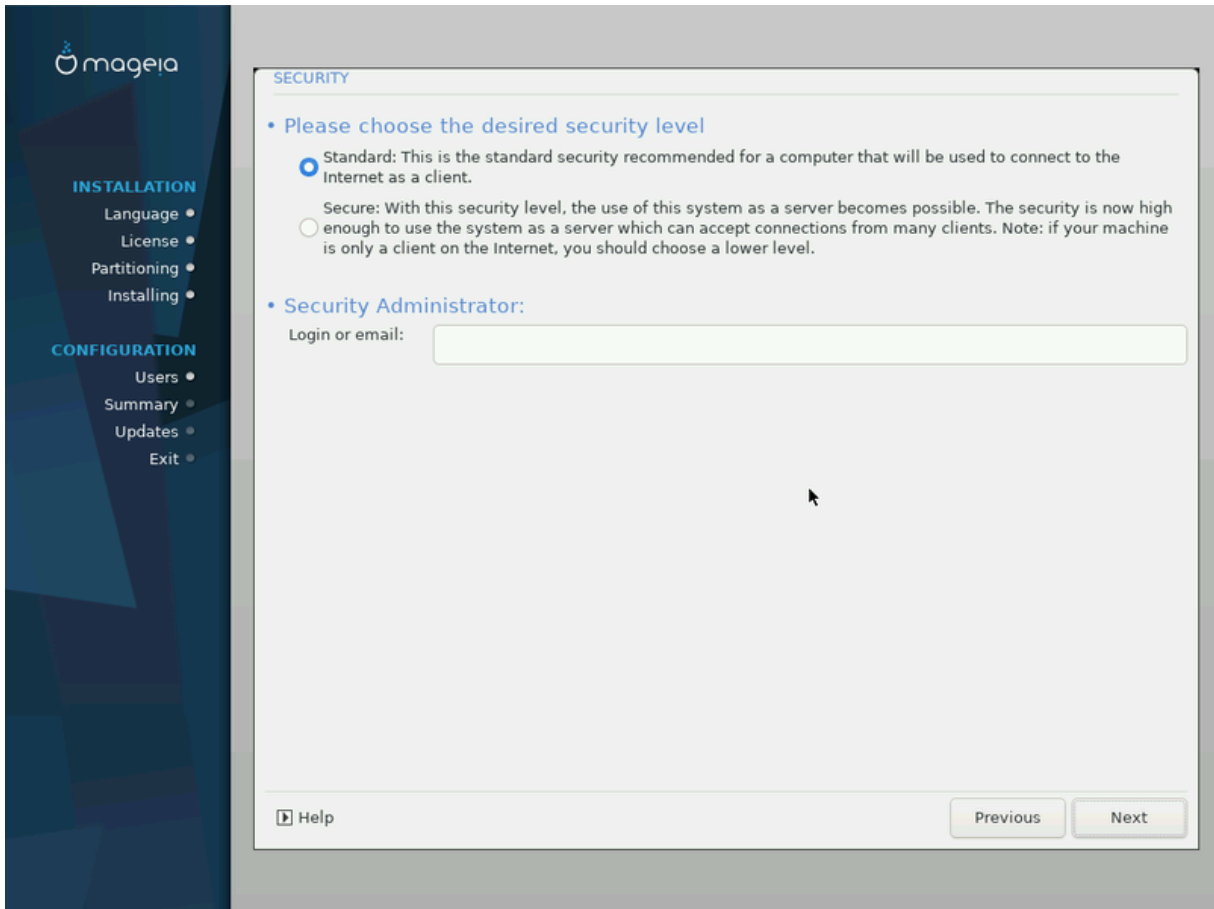
The default driver should work without problems. However, if after install you do encounter problems, then run **draksound** or start this tool via MCC (Mageia Control Center), by choosing the Hardware tab and clicking on Sound Configuration at the top right of the screen.

With this tool, you can choose which backend will become the sound server, so manage the sound. You have the choice between pulseaudio and pipewire. For the second, you can choose a session manager **Wire-plumber** or **Pipewire Media Session**. After applying the new configuration, the needed packages will be installed and services configured.

19.1. Advanced

Clicking **Advanced** in this screen, you will have the choice to reset the sound mixer configuration to default values.

20. Security Level



Please choose the desired security level

Standard is the default, and recommended setting for the average user.

Secure will create a highly protected system - for instance if the system is to be used as a public server.

Security Administrator

This item allows you to configure an email address to which the system will send *security alert messages* when it detects situations which require notification to a system administrator.

A good, and easy-to-implement, choice is to enter `<user>@localhost` - where `<user>` is the login name of the user to receive these messages.

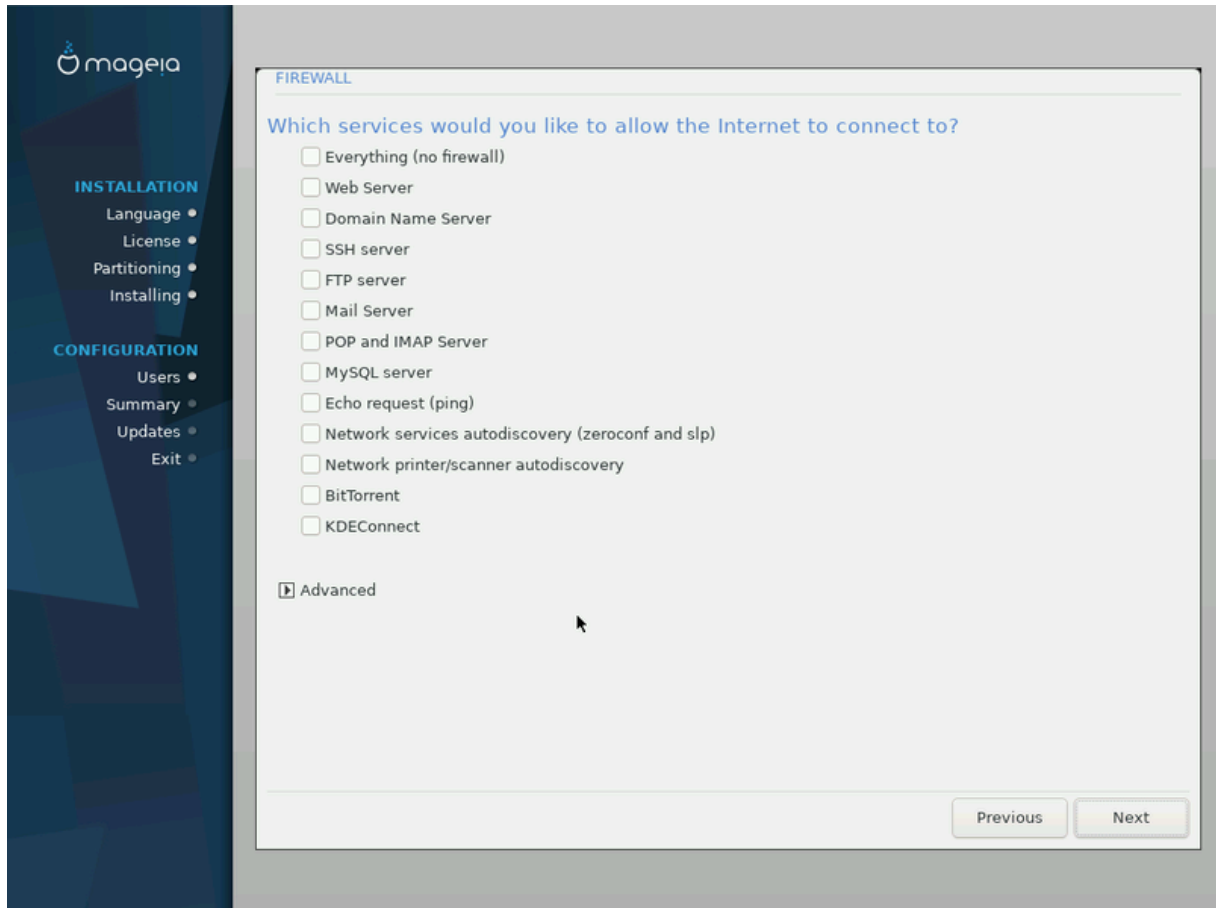


The system sends such messages as **Unix Mailspool messages**, not as "ordinary" SMTP mail: this user must therefore be configured for receiving such mail!

It will always be possible to adjust your security settings post-install in the *Security* section of the Mageia Control Center.

21. Firewall

This section allows you to configure some simple firewall rules: they determine which type of message from the Internet will be accepted by the target system. This, in turn, allows the corresponding services on the system to be accessible from the Internet.



In the default setting (no button is checked), no service of the system is accessible from the network. The *Everything (no firewall)* option enables access to all services of the machine - an option that does not make much sense in the context of the installer since it would create a totally unprotected system. Its veritable use is in the context of the Mageia Control Center (which uses the same GUI layout) for temporarily disabling the entire set of firewall rules for testing and debugging purposes.

All other options are more or less self-explanatory. As an example, you will enable the CUPS server if you want printers on your machine to be accessible from the network.

Advanced

The *Advanced* option opens a window where you can enable a series of services by typing a list of “couples” (blank separated)

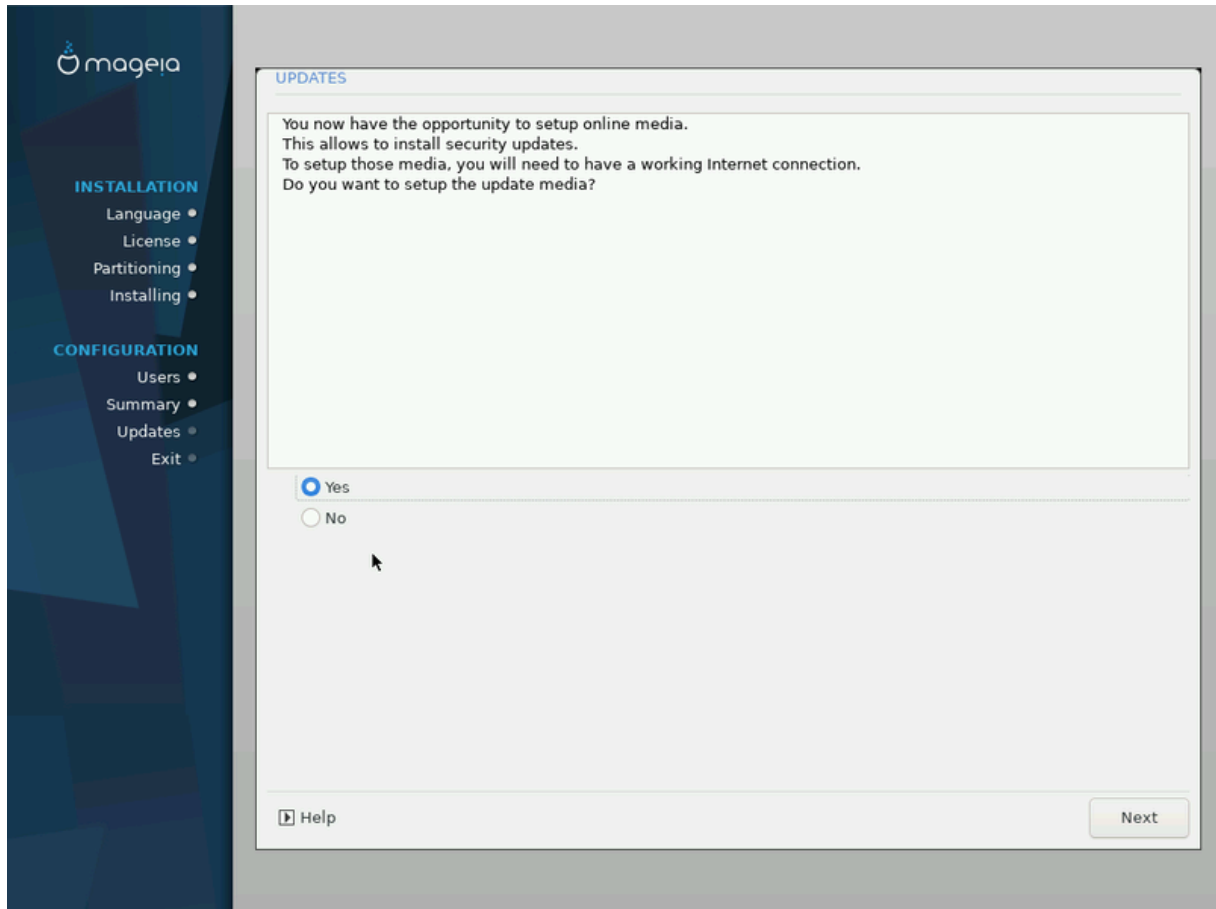
`<port-number>/<protocol>`

- `<port-number>` is the value of the port assigned to the service you want to enable (e.g. 873 for the RSYNC service) as defined in *RFC-433*;
- `<protocol>` is one of *TCP* or *UDP* - the internet protocol that is used by the service.

For instance, the entry for enabling access to the RSYNC service therefore is `873/tcp`.

In case a service is implemented to use both protocols, you specify 2 couples for the same port.

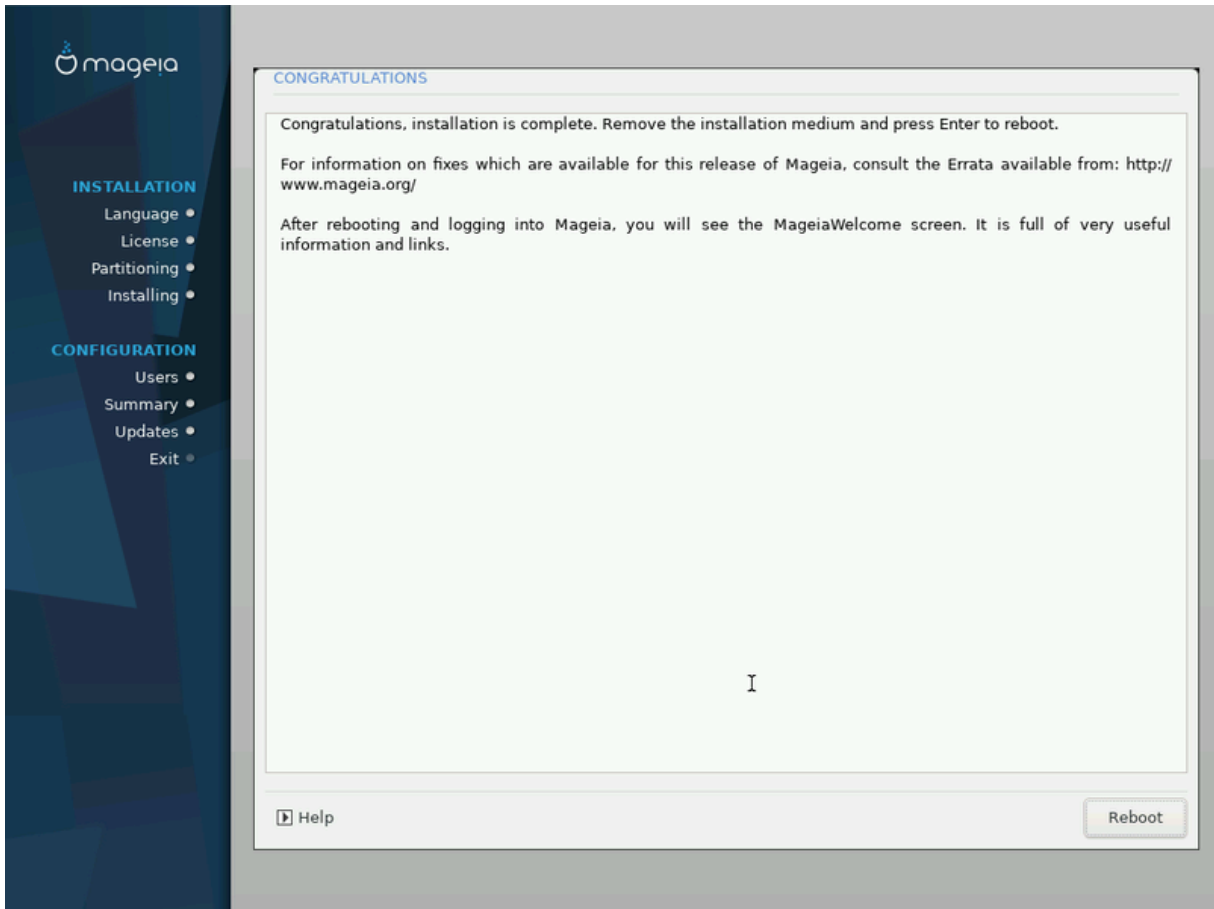
22. Updates



Since this version of Mageia was released, some packages will have been updated or improved.

- Select *Yes* if you wish to download and install them
- Select *No* if you don't want to do this now, or if you aren't connected to the Internet
- Press *Next* to continue

23. Congratulations



You have finished installing and configuring Mageia and it is now safe to remove the installation medium and reboot your computer.

After rebooting, you can use the bootloader screen to choose which operating system to start (if there are more than one on your computer).

If you didn't adjust the settings for the bootloader, your Mageia install will be automatically selected and started.

Enjoy!

Visit www.mageia.org/en/ [<http://www.mageia.org/en/>] if you have any questions or want to contribute to Mageia

24. Uninstalling Mageia

If Mageia didn't convince you or you can't install it correctly - in short you want get rid of it - that is your right and Mageia also gives you the possibility to uninstall. This is not true for every operating system.

After backing up your data, reboot your Mageia installation DVD and select *Rescue system*, then *Restore Windows boot loader*. At the next boot, you will only have Windows, with no option to choose your Mageia operating system.

In Windows, to recover the space used by Mageia partitions: click on Start # Control Panel # Administrative Tools # Computer Management # Storage # Disk Management. You will recognise a Mageia partition because

they are labeled **Unknown**, and also by their size and place on the disk. Right-click on each of these partitions and select *Delete* to free up the space.

If you are using Windows XP, you can create a new partition and format it (FAT32 or NTFS). It will then get a partition letter.

If you have Vista or 7, you have one more possibility, you can extend the existing partition that is at the left of the freed space. There are other partitioning tools that can be used, such as **gparted**, available for both Windows and Linux. As always, when changing partitions, be very careful to back up anything important to you.