

## 6.3.2. Partitioning and Mount Point Selection

At this time, after hardware detection has been executed a final time, `debian-installer` should be at its full strength, customized for the user's needs and ready to do some real work. As the title of this section indicates, the main task of the next few components lies in partitioning your disks, creating filesystems, assigning mountpoints and optionally configuring closely related options like RAID, LVM or encrypted devices.

If you are uncomfortable with partitioning, or just want to know more details, see [Appendix C](#).

First you will be given the opportunity to automatically partition either an entire drive, or available free space on a drive. This is also called “guided” partitioning. If you do not want to autopartition, choose **Manual** from the menu.

### 6.3.2.1. Supported partitioning options

The partitioner used in `debian-installer` is fairly versatile. It allows to create many different partitioning schemes, using various partition tables, file systems and advanced block devices.

Exactly which options are available depends mainly on the architecture, but also on other factors. For example, on systems with limited internal memory some options may not be available. Defaults may vary as well. The type of partition table used by default can for example be different for large capacity hard disks than for smaller hard disks. Some options can only be changed when installing at medium or low `debconf` priority; at higher priorities sensible defaults will be used.

The installer supports various forms of advanced partitioning and use of storage devices, which in many cases can be used in combination.

- *Logical Volume Management (LVM)*
- *Software RAID*

Supported are RAID levels 0, 1, 4, 5, 6 and 10.

- *Encryption*
- *Serial ATA RAID (using dmraid)*

Also called “fake RAID” or “BIOS RAID”. Support for Serial ATA RAID is currently only available if enabled when the installer is booted. Further information is available on our Wiki (<http://wiki.debian.org/DebianInstaller/SataRaid>).

- *Multipath (experimental)*

See our Wiki (<http://wiki.debian.org/DebianInstaller/MultipathSupport>) for information. Support for multipath is currently only available if enabled when the installer is booted.

The following file systems are supported.

- *ext2, ext3, ext4*

The default file system selected in most cases is `ext3`; for `/boot` partitions `ext2` will be selected by default when guided partitioning is used.

- *jfs* (not available on all architectures)
- *xfs* (not available on all architectures)
- *reiserfs* (optional; not available on all architectures)

Support for the Reiser file system is no longer available by default. When the installer is running at medium or low debconf priority it can be enabled by selecting the `partman-reiserfs` component. Only version 3 of the file system is supported.

- *qnx4*

Existing partitions will be recognized and it is possible to assign mount points for them. It is not possible to create new qnx4 partitions.

- *FAT16, FAT32*

- *NTFS* (read-only)

Existing NTFS partitions can be resized and it is possible to assign mount points for them. It is not possible to create new NTFS partitions.

### 6.3.2.2. Guided Partitioning

If you choose guided partitioning, you may have three options: to create partitions directly on the hard disk (classic method), or to create them using Logical Volume Management (LVM), or to create them using encrypted LVM<sup>4</sup>.

**Note:** The option to use (encrypted) LVM may not be available on all architectures.

When using LVM or encrypted LVM, the installer will create most partitions inside one big partition; the advantage of this method is that partitions inside this big partition can be resized relatively easily later. In the case of encrypted LVM the big partition will not be readable without knowing a special key phrase, thus providing extra security of your (personal) data.

When using encrypted LVM, the installer will also automatically erase the disk by writing random data to it. This further improves security (as it makes it impossible to tell which parts of the disk are in use and also makes sure that any traces of previous installations are erased), but may take some time depending on the size of your disk.

**Note:** If you choose guided partitioning using LVM or encrypted LVM, some changes in the partition table will need to be written to the selected disk while LVM is being set up. These changes effectively erase all data that is currently on the selected hard disk and you will not be able to undo them later. However, the installer will ask you to confirm these changes before they are written to disk.

If you choose guided partitioning (either classic or using (encrypted) LVM) for a whole disk, you will first be asked to select the disk you want to use. Check that all your disks are listed and, if you have several disks, make sure you select the correct one. The order they are listed in may differ from what you are used to. The size of the disks may help to identify them.

Any data on the disk you select will eventually be lost, but you will always be asked to confirm any changes before they are written to the disk. If you have selected the classic method of partitioning, you will be able to undo any changes right until the end; when using (encrypted) LVM this is not possible.

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4. The installer will encrypt the LVM volume group using a 256 bit AES key and makes use of the kernel's "dm-crypt" support.

Next, you will be able to choose from the schemes listed in the table below. All schemes have their pros and cons, some of which are discussed in Appendix C. If you are unsure, choose the first one. Bear in mind that guided partitioning needs a certain minimal amount of free space to operate with. If you don't give it at least about 1GB of space (depends on chosen scheme), guided partitioning will fail.

Partitioning scheme	Minimum space	Created partitions
All files in one partition	600MB	/, swap
Separate /home partition	500MB	/, /home, swap
Separate /home, /usr, /var and /tmp partitions	1GB	/, /home, /usr, /var, /tmp, swap

If you choose guided partitioning using (encrypted) LVM, the installer will also create a separate /boot partition. The other partitions, including the swap partition, will be created inside the LVM partition.

After selecting a scheme, the next screen will show your new partition table, including information on whether and how partitions will be formatted and where they will be mounted.

The list of partitions might look like this:

```

IDE1 master (hda) - 6.4 GB WDC AC36400L
    #1 primary   16.4 MB  B f ext2      /boot
    #2 primary  551.0 MB      swap      swap
    #3 primary   5.8 GB      ntfs
    pri/log      8.2 MB      FREE SPACE

IDE1 slave (hdb) - 80.0 GB ST380021A
    #1 primary   15.9 MB      ext3
    #2 primary  996.0 MB      fat16
    #3 primary    3.9 GB      xfs        /home
    #5 logical    6.0 GB      f ext3      /
    #6 logical    1.0 GB      f ext3      /var
    #7 logical   498.8 MB      ext3
    #8 logical   551.5 MB      swap      swap
    #9 logical    65.8 GB      ext2

```

This example shows two IDE harddrives divided into several partitions; the first disk has some free space. Each partition line consists of the partition number, its type, size, optional flags, file system, and mountpoint (if any). Note: this particular setup cannot be created using guided partitioning but it does show possible variation that can be achieved using manual partitioning.

This concludes the guided partitioning. If you are satisfied with the generated partition table, you can choose **Finish partitioning and write changes to disk** from the menu to implement the new partition table (as described at the end of this section). If you are not happy, you can choose to **Undo changes to partitions** and run guided partitioning again, or modify the proposed changes as described below for manual partitioning.

### 6.3.2.3. Manual Partitioning

A similar screen to the one shown just above will be displayed if you choose manual partitioning except that your existing partition table will be shown and without the mount points. How to manually set up your partition table and the usage of partitions by your new Ubuntu system will be covered in the remainder of this section.

If you select a pristine disk which has neither partitions nor free space on it, you will be asked if a new partition table should be created (this is needed so you can create new partitions). After this, a new line entitled “FREE SPACE” should appear in the table under the selected disk.

If you select some free space, you will have the opportunity to create a new partition. You will have to answer a quick series of questions about its size, type (primary or logical), and location (beginning or end of the free space). After this, you will be presented with a detailed overview of your new partition. The main setting is **Use as:**, which determines if the partition will have a file system on it, or be used for swap, software RAID, LVM, an encrypted file system, or not be used at all. Other settings include mountpoint, mount options, and bootable flag; which settings are shown depends on how the partition is to be used. If you don’t like the preselected defaults, feel free to change them to your liking. E.g. by selecting the option **Use as:**, you can choose a different filesystem for this partition, including options to use the partition for swap, software RAID, LVM, or not use it at all. Another nice feature is the ability to copy data from an existing partition onto this one. When you are satisfied with your new partition, select **Done setting up the partition** and you will return to **partman**’s main screen.

If you decide you want to change something about your partition, simply select the partition, which will bring you to the partition configuration menu. This is the same screen as is used when creating a new partition, so you can change the same settings. One thing that may not be very obvious at a first glance is that you can resize the partition by selecting the item displaying the size of the partition. Filesystems known to work are at least fat16, fat32, ext2, ext3 and swap. This menu also allows you to delete a partition.

Be sure to create at least two partitions: one for the *root* filesystem (which must be mounted as */*) and one for *swap*. If you forget to mount the root filesystem, **partman** won’t let you continue until you correct this issue.

Capabilities of **partman** can be extended with installer modules, but are dependent on your system’s architecture. So if you can’t see all promised goodies, check if you have loaded all required modules (e.g. `partman-ext3`, `partman-xfs`, or `partman-lvm`).

After you are satisfied with partitioning, select **Finish partitioning and write changes to disk** from the partitioning menu. You will be presented with a summary of changes made to the disks and asked to confirm that the filesystems should be created as requested.

#### 6.3.2.4. Configuring Multidisk Devices (Software RAID)

If you have more than one `harddrive`<sup>5</sup> in your computer, you can use **mdcfg** to set up your drives for increased performance and/or better reliability of your data. The result is called *Multidisk Device* (or after its most famous variant *software RAID*).

MD is basically a bunch of partitions located on different disks and combined together to form a *logical* device. This device can then be used like an ordinary partition (i.e. in **partman** you can format it, assign a mountpoint, etc.).

What benefits this brings depends on the type of MD device you are creating. Currently supported are:

##### RAID0

Is mainly aimed at performance. RAID0 splits all incoming data into *stripes* and distributes them equally over each disk in the array. This can increase the speed of read/write operations, but when one of the disks fails, you will lose *everything* (part of the information is still on the healthy disk(s), the other part *was* on the failed disk).

5. To be honest, you can construct an MD device even from partitions residing on single physical drive, but that won’t give any benefits.