

# Helper's cheat sheet

**Note:** Our helpers wear colored bracelets for showing their “special abilities”. Green = OpenSUSE, red = firmware/drivers yellow = UEFI, white = Mac.

## Before installing

### Disable fast boot in Windows 8/8.1/10

- Open the control panel (Win 10: the old-style control panel, not the newish one) and select the power options
- Click on „Choose what the power buttons do“ on the left bar
- By acquiring admin rights click „Change settings that are currently unavailable“
- scroll down and uncheck the box for fast startup

### ThinkPad T.40 Serie BIOS Version

- BIOS version should be greater or equal to 1.14. 2.x to be sure not to brick the system

### Getting to BIOS in Windows 8/8.1/10

- Get to the power button (metro bar in 8/8.1, start menu in 10)
- Press the shutdown button
- Press and hold SHIFT while selecting Restart
- In the appearing GUI select „Extended options“ or similar until „Go to UEFI firmware“

### Find out boot type, disable hybrid boot mode: UEFI or BIOS?

- MUST do this before booting the Linux live system, otherwise existing systems might be broken!
- In the BIOS, go to the boot options and set either BIOS (often called legacy) XOR UEFI mode! **DO NOT USE HYBRID MODES.**
- If available (e.g. on Lenovo Workstation laptops), disable CSM when using UEFI / enable it when using BIOS mode.
- Save, reboot and check if the existing OS starts
  - If yes, you found the right mode
  - If no, it's the other mode, so switch it and don't forget to attempt to boot the existing OS again, this time it must work or there's a real problem.

### Find out the partition table type: EFI or MBR?

- MUST find this out before installing, can mess up the system otherwise!
- Check for a partition labelled "EFI" and formatted as FAT32 (generally pretty small). Note that this partition might not be visible from Windows. If there is such a partition, it's EFI, else it's an MBR table. Remember that type!
- At the last step of installing, double-check that the installer detected partition type correctly.

## Partitioning

### Watch for hybrid HDD/SSD systems

- Intel provides an SSD cache (found on a HP laptop). It doesn't even show under Windows. On OpenSuse, it show up as an extra hard disk labeled: Intel Fast Flash. DO NOT TOUCH this disk.
- We experienced problems resizing the hard disk on that machine (it said it's inconsistent). To solve this, you have to start up Windows and disable Intel Smart Response in the utility installed on Windows.

### MBR system setup

- make sure system has no EFI! See above: "Find out the partition talbe type: EFI or MBR?"
- Each HDD can only have max. 4 partitions which are either primary or logical, so I recommend first creating a new logical partition which again can contain 4 partitions, which we can all use for the linux installation
- If there are already 4 primary partitions on the disk (e.g. old HP laptops), you must delete a partition. We typicalle choose the ones like „HP TOOLS“.
- More on this topic can be found here:  
[http://wiki.project21.ch/Partitionierung\\_von\\_HDs\\_mit\\_vier\\_primären\\_Partitionen](http://wiki.project21.ch/Partitionierung_von_HDs_mit_vier_primären_Partitionen)

### EFI system setup

- make sure the system has EFI! See above: "Find out the partition talbe type: EFI or MBR?"
- Lenovo \*\*40 => BIOS update before proceeding!
- make sure, that the system has booted in EFI mode (check whether /sys/firmware/efi exists)
- make sure the system found the efi partition and it is mounted at /boot/efi (type 'mount' in console, which lists all mounted devices)
- when selecting the partition scheme for installation, check whether the efi partition is recognized and will be mounted at /boot/efi
- If any EFI bugs occur, check the wiki article for EFI, which contains workarounds for many bugs.

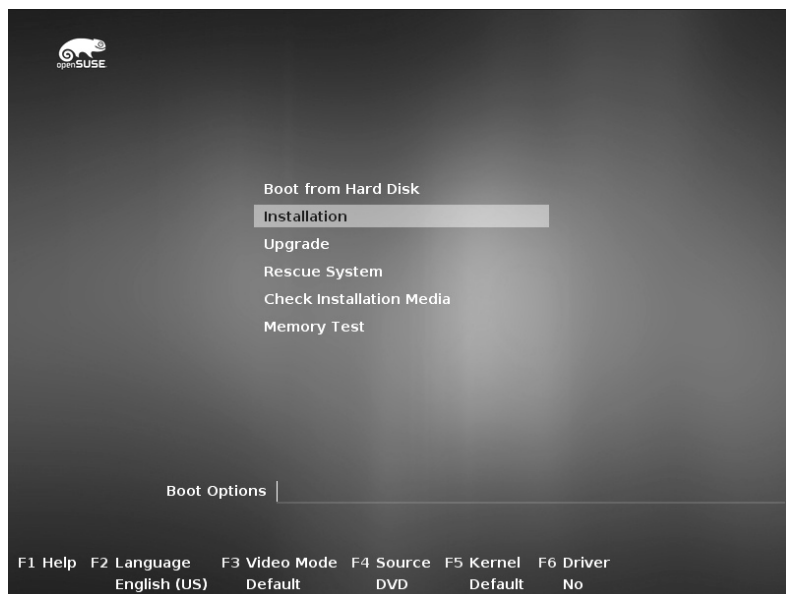
### Recommended partitions on a linux system:

- At least 20 GB for /
- swap partition at least as large as total amount of installed RAM
- optional own partitions for /home, /usr, /var, ... whatever the clients wish. Note that this is a religious question without clear answer which option is better:
  - Advantage of separate home: More clear to backup (e.g. with dd), more independent of system
  - Advantage of just one partition („/“): The entire space can be used for whatever, no separate and fix space constraint for system and home.

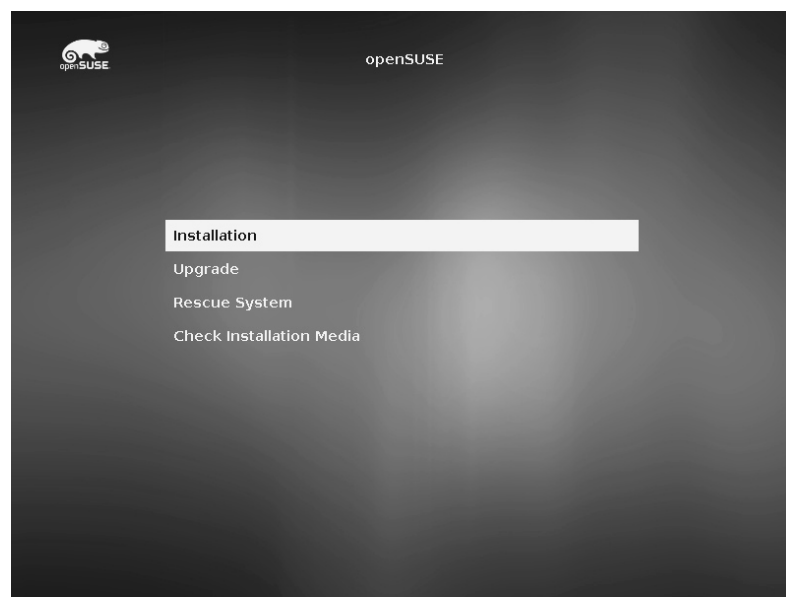
## Using openSUSE

### Booting openSUSE in BIOS / EFI mode

- To check how the USB key has booted compare the screen to the pictures below



BIOS mode



EFI mode

### Installing software in Yast

- Open Yast via start menu → settings → yast
- Open "Install Software" (or so)
- There you can search for keywords and select packages to install

### **Installing Software over the console**

- Open a root terminal
- Use “zypper in <package>” to install software
- Use “zypper se <keyword>” to do a search
- Use “zypper help” for detailed information
- Hint: If you type many zypper commands, start “zypper sh” to start a zypper shell

## **Exotic problems**

### **Installation worked fine, but instead of GRUB only Windows is booting**

- Disable secure boot (which would prevent GRUB from chainloading)
- Find /boot/efi/EFI/Microsoft/Boot/bootmgfw.efi (Windows boot loader)
- Rename it such that any Linux expert can still find it!
- Find /boot/efi/EFI/<distro\_name>/grubx64.efi (GRUB)
- copy GRUB to the location that was previously owned by the windows boot loader
- open the os\_prober file in /etc/grub.d and search for the Windows boot entry
- update the position of the (renamed) windows boot loader and copy the text of the menuentry to /etc/grub.d/40\_custom
- remove os\_prober
- 'grub-mkconfig -o /boot/grub/grub.cfg'
- Document all changes so a future linux expert helping our client can figure out what you did!
- In case of a problem ask Maximilian or Jan