**www.alcasar.net**


# INSTALLATION

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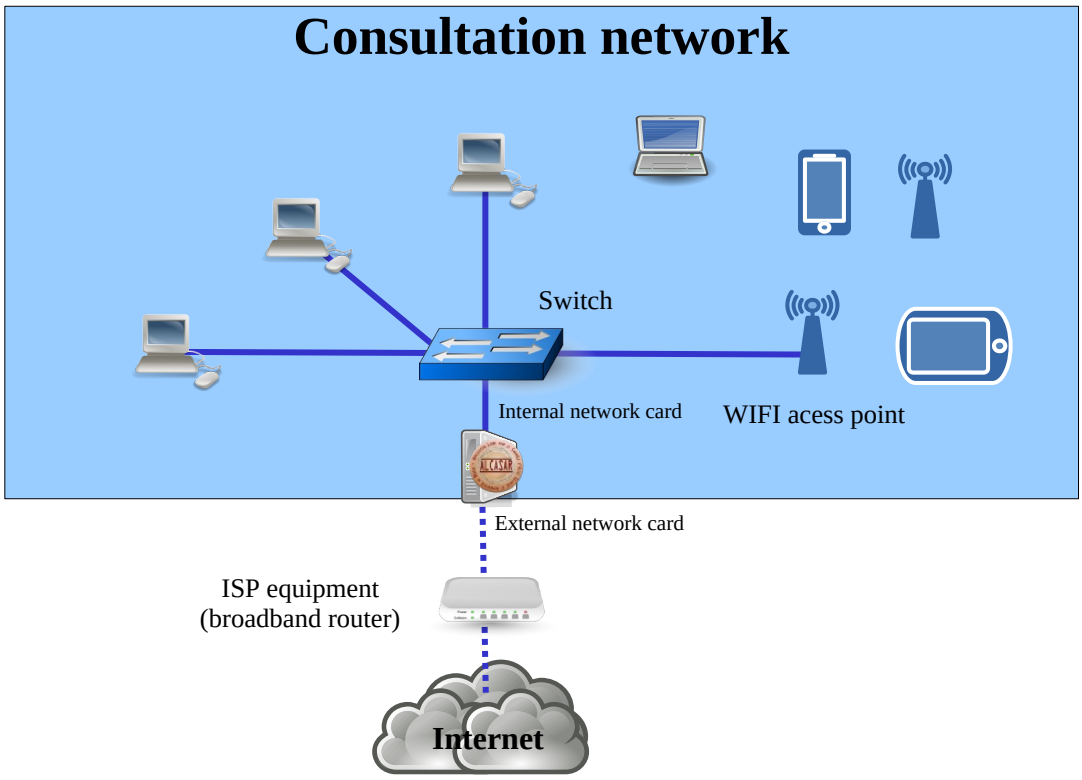
| Project : ALCASAR | Author : Rexy with help from “Alcasar team”. Thanks to translators. |
| Object : Installation | Version : 3.7.0 |
| Keywords : Network Access Control (NAC), accountability, traceability, authentication, captive portal, parental control. | Date : 2025, March |

# 1. Introduction

This document describes the installation procedure of the ALCASAR portal. It is supplemented with three other documents : the presentation document, the operating instructions document and the technical document.
If you already have a working version of ALCASAR and you want to upgrade it, please refer to the operating instructions document (chapter « update »).
ALCASAR can be installed on a standard computer with two Ethernet network cards. The first one is connected to the Internet Service Provider equipment. The second one is connected to the switch used to service the equipment of the consultation network.
By default, the IP address of this second network card is : 192.168.182.1/24. This allows you to have a class C network (254 equipment). This network addressing plan can be modified during the installation stage. For all equipment of consultation network, ALCASAR is the DHCP server, the DNS server, the network time-server and the default router (gateway). **Thus, on this network, there must be no other DHCP server and gateway** (check your Wi-Fi access points).




## Examples of IP addressing plans

| Parameters<br>Classe | @IP of the network | Number of equipment | Network mask | @IP of ALCASAR (this address is the IP address of the DNS server and of the default gateway | DNS suffix |
|---|---|---|---|---|---|
| Default IP address plan (“C class” ) | 192.168.182.0/24 | 253 | 255.255.255.0 | 192.168.182.1/24 | localdomain |
| “B class” IP plan | 172.16.x.0/16<br>1 ≤ x ≥ 255 | 65533 | 255.255.0.0 | 172.16.x.1/16 | localdomain |

Even if it is possible to define a “A class” network, you shouldn't do it because the embedded DHCP server will have to manage over than 16 million IP addresses. The management of such volume of addresses would spend too much memory.

# 2. Installation

The installation of ALCASAR consists of two steps. The first one is the installation of a minimalist Linux operating system based on Linux-Mageia. The second step is to run a script which installs and configures all the components of ALCASAR.

## 2.1. Hardware requirement

ALCASAR only requires one standard computer (PC) or a virtual machine (VM) with 4GO of memory, two network cards and a drive with a capacity of at least 100 Go in order to be able to store logs related to connections tracing. ALCASAR includes several optional filtering systems (network protocols, URL, IP addresses, domain names and antimalware). If you decide to enable these filtering systems, it is recommended to use at **least 8 GB** of RAM in order to ensure an acceptable processing speed (ALCASAR loves the RAM ;-) ).

**On a VM,** the following information must be kept in mind :

- the size of the dynamic hard drive must not be smaller than 40G;
- The graphic card should be as simple as possible ("**vga**" generally).
- On KVM/QEMU hypervisors like "Promox", the network cards (NIC) mustn't be "virtio" type (choose "e1000" or "Intel-pro1000" for example); You can also let the VM manage the real NIC of the PC. To do that, after removing the virtual NIC, choose the following options : « Add hardware » + « Host PCI peripheral » + choose the PCI card corresponding to your physical network card.
- A complementary document is published on ALCASAR WEB site. It explains the installation of ALCASAR on « Virtualbox » or « Proxmox ».

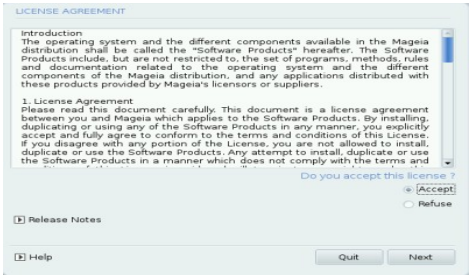
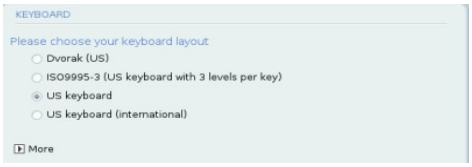
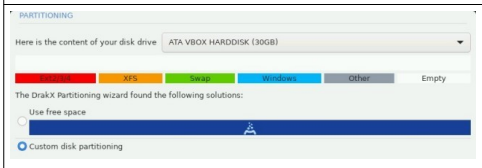
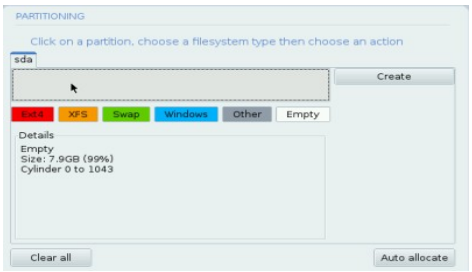
## 2.2. Installation of the system

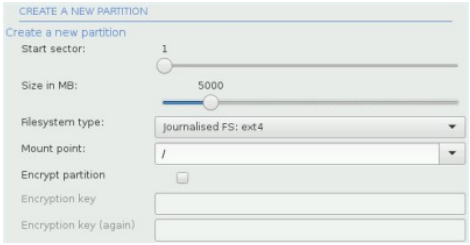
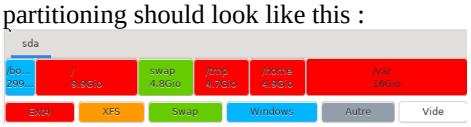
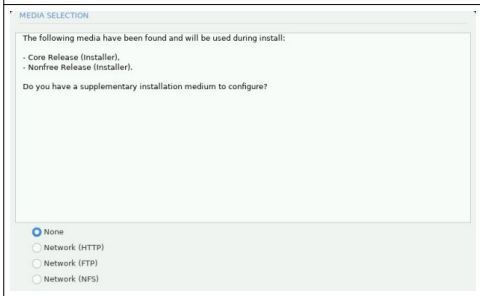
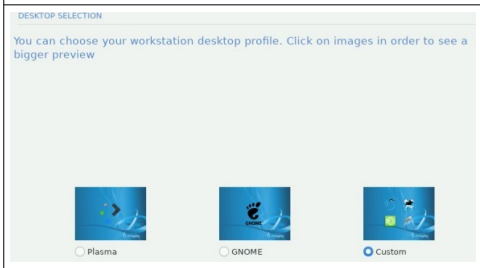
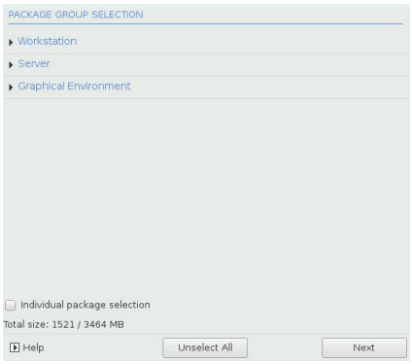
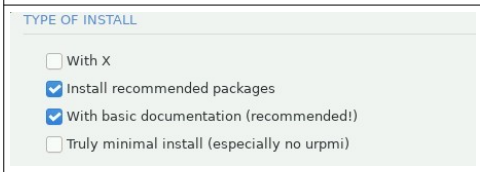
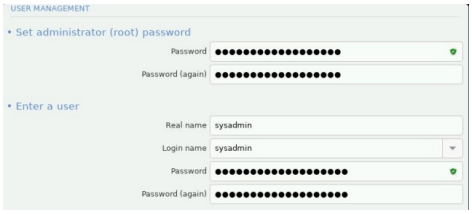
The installation procedure of the operating system is the following (estimated time : 6') :

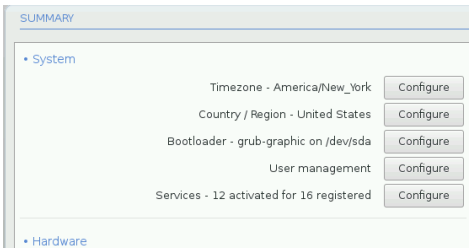
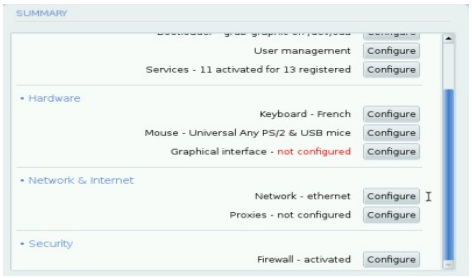
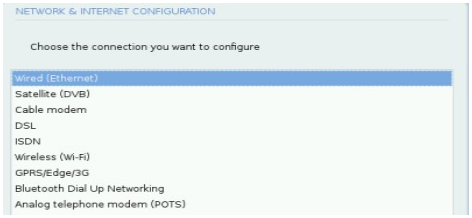
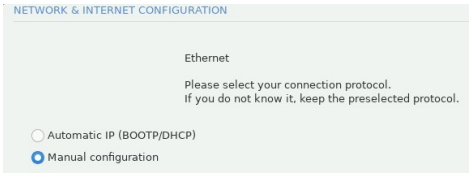
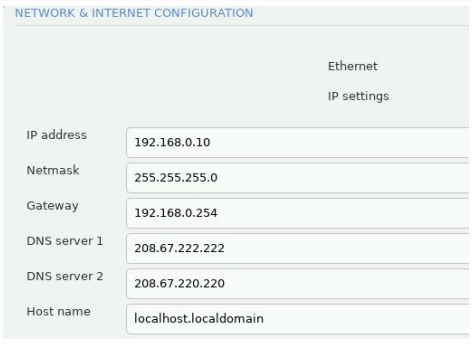
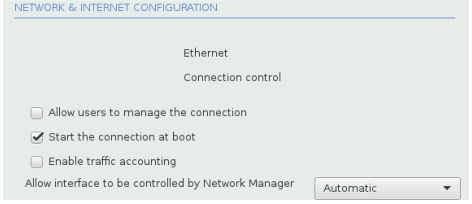
- Retrieve the ISO file of **version 9** of Linux-Mageia (file : « mageia-9-x86_64.iso ») on Mageia website as well as on several mirror sites of Mageia. Another solution is to retrieve the ISO file we specially create for ALCASAR. This file is downloadable on the ALCASAR web site or in the folder "iso" of the site ftp.alcasar.net. This file isn't always available when a new version of ALCASAR is ready.
- On a PC:
  - Burn this ISO image file on a removable support (CD, DVD, USB flash drive)[1];
  - Configure the BIOS settings to remove the "Secure Boot" option, to set the date and time and to enable booting from the CD or USB flash drive. At the end of the installation, configure, once again, the BIOS settings to only boot from the hard drive;
  - Insert your removable support. Reboot the computer and follow the instructions below :
- On a VM:
  - Copy the ISO file in the dedicated zone of the hypervisor. Link this ISO image to your VM. Boot your VM.

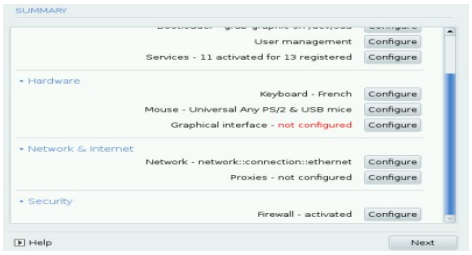
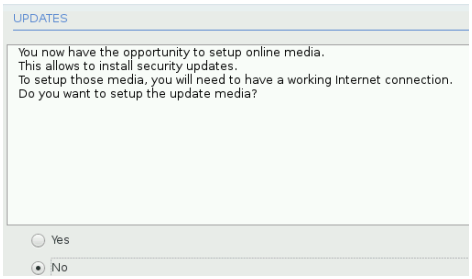
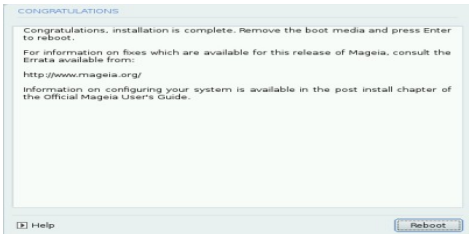
1 Two solutions are used to create a bootable USB flash drive :

- in graphical mode you can use "rufus" or "win32 disk image" (Windows) or "isodumper" (Linux)
- in console mode on Linux, plug the USB flash drive and get the name of the device with the "*fdisk -l*" command (a USB flash drive is usually "/dev/sdb" or "/dev/sdc"). Run the command : "*dd if=<name_of_ISO_image> of=<name_of_usb_drive> bs=1M*".

| Screen display | Comments | Actions to achieve |
|---|---|---|
|  <br>  | After starting the computer, one of these two screens is displayed.<br><br>* If the graphical mode doesn't work, you have to configure the BIOS settings to allocate more than 2 MB of shared memory for the graphics card. | Reading the first line of this screen, you know if your PC (or VM) use an old BIOS (legacy BIOS) or an UEFI*. Remember the type of your BIOS.<br><br>Select “Install Mageia”.<br><br>* Unified Extensible Firmware Interface |
|  | | Select your language and click “Next”. |
|  | | Accept the license agreement then click “Next”.<br><br>Info : this license agreement explains that the installed software is free (GPL). |
|  | | Choose your keyboard layout and click “Next”. |
|  | The hard disk partitioning will be adapted to the needs of ALCASAR (see next step). | Select “Custom disk partitioning” then click “Next”. |
|  | After removing all the partitions, create the following 5 or 6 partitions :<br>! Create the 1st “/boot/efi” partition only if you have an EFI BIOS.<br>• /boot/EFI/ : 300 MB - type: efi system partition<br>• / : 10 GB - type: Journalised FS: ext4<br>• swap : 5 GB - type: Linux swap<br>• /tmp : 5 GB - type: Journalised FS: ext4<br>• /home : 5 GB – type: Journalised FS: ext4<br>• /var : the rest of the hard drive (mini 10GB) – type: Journalised FS: ext4 | Click on “Clear all”.<br>Then click on the area of the disk (sda) to create each new partition. |

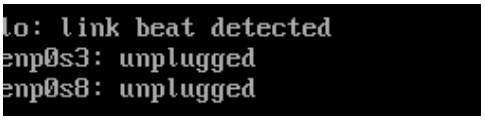
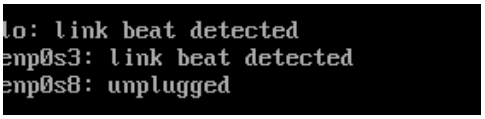
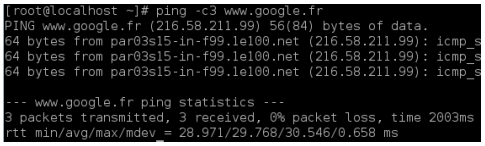
| Screen display | Comments | Actions to achieve |
|---|---|---|
|  | At the end of this operation, and depending on the size of your hard drive, the partitioning should look like this :<br>  | - Create the root partition (/). Choose its size (10 Go) and its filesystem (ext4). Repeat this step for all the partitions.<br>- Once the partitioning completed, click on “Done”. |
|  | For ALCASAR, it does not need any other media. | Select “None” then click “Next”. |
|  | This screen isn’t displayed if you use the ISO file we specially create for ALCASAR. | Select the two media “Core release” and “Nonfree Release”, then click “Next”. |
|  | This screen isn’t displayed if you use the ISO file we specially create for ALCASAR.<br><br>ALCASAR doesn’t need a graphical environment (it is controlled from a WEB browser). | Select “Custom” then click “Next.” |
|  | This screen isn’t displayed if you use the ISO file we specially create for ALCASAR.<br><br>Package group selection : ALCASAR only requires a very minimal install. | Select “Unselect All" then click "Next".<br><br>Info : On Linux, a package is an archive file containing all the components of a specific software (binary files, help files, configuration files, etc.). |
|  | This screen isn’t displayed if you use the ISO file we specially create for ALCASAR. | Select only “Install recommended packages” and the “basic documentation”, then click “Next”.<br>The copy of the packages on the hard disk is then launched. Estimated time : 1' |
|  | | Assign a password to the "root" account, then, create the "sysadmin" account and assign it a password. Then, click “Next”. |

| Screen display | Comments | Actions to achieve |
|---|---|---|
|  | Configuration of your time zone and your country | In the group “System”, click on "Configure" in "time zone” section then in “Country” section. Select your time zone and your country. |
|  | | Click on "Configure" in "Network-ethernet" in the "Network & Internet" section. |
|  | | Select the type of Internet connection. In the case of the use of an ISP broadband modem, choose "Wired (Ethernet)". Then, click “Next”.<br><br>Info : no test has yet been made on other types of Internet access. |
|  | At that time, only the network interface connected to the broadband modem of the ISP has to be configured. The second network interface, connected to the consultation network, will be configured later, during the installation of ALCASAR. | Select the interface to configure, then click “Next”.<br><br>Tips : Choose the interface with the smallest index.<br>**Write the name of this interface on a paper.**<br><br>Info : the names of interfaces are linked with the physical architecture of your PC. They could differ from the printscreen. |
|  | | Select “Manual configuration”, then click “Next”.<br><br>Info : While it is possible to let this interface in “bootp/dhcp” mode, we recommended configuring it manually (static mode). |
|  | Example :<br>• IP address : this address must be in the same sub-net as the address of the broadband modem.<br>• Netmask : 255.255.255.0<br>• Gateway : This is the address of the broadband modem.<br>• DNS 1 and DNS 2 :*<br>• Host name : Leave the default value (or blank) | Enter the parameters of this interface<br><br>* Enter the IP addresses of the DNS servers provided by your ISP. You can also use other DNS servers. Examples:<br>• Association DNS0.eu (FR) (DNS1=193.110.81.0, DNS2=185.253.5.0)<br>• Association (FR) FDN (DNS1=80.67.169.12, DNS2=80.67169.40)<br>• Free project “OpenNic” (see the web site to know the closest servers for you)<br>• Association (US) Quad9 (DNS1=9.9.9.9)<br>• Association (US) Cloudflare (DNS1=1.1.1.1, dns2=1.0.0.1) |
|  | | Select only "Start the connection at boot", the click “Next”. |

| Screen display | Comments | Actions to achieve |
|---|---|---|
|  | It is not necessary to start the connection now. | Select "No", then click “Next”. |
|  | | Click "Finish" |
|  | | Click "Next" |
|  | If you use the ISO file we specially create for ALCASAR, the installation will continue (white screen) and the system will reboot automatically.<br><br>Security updates will be managed during the installation of ALCASAR. | Select "No" and click on "Next". |
|  | If you use the ISO file we specially create for ALCASAR, the installation will continue (white screen) and the system will reboot automatically.<br><br>The installation is finished. | Click "Reboot"<br>Remove the CDROM or the USB flash drive.<br>Reconfigure the BIOS to boot only from the hard drive. |

## 2.3. Installation of ALCASAR

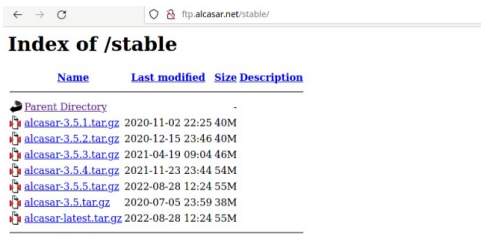
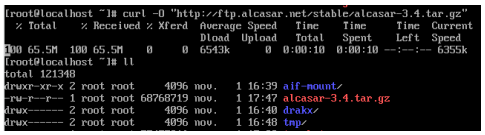
### Configuration of the network cards

| Screen display | Comments | Actions to achieve |
|---|---|---|
|  | Disconnect the cables of the two network cards.<br>Log in as root | |
|  | Display continuously the state of the network cards. | *watch ifplugstatus* |
|  | When you connect another equipment via a cable to one of your network cards, its status changes from “unplugged” (down) to “link beat detected” (up). | *You have to connect the cable linked to the ISP broadband modem (Internet access) in the network interface you have previously configured (normally, the interface with the smallest index).* |
| | The two network interfaces must be up to continue the install process. | Connect the second network interface to the switch of your internal LAN. Verify that the two interfaces are enabled. Then stop the command with the *<Ctrl> + c keys* |
|  | Configure the Internet-connected card, then test Internet connectivity. | ifup enp0s3<br>*ping -c3 free.fr (or another Internet site)* |

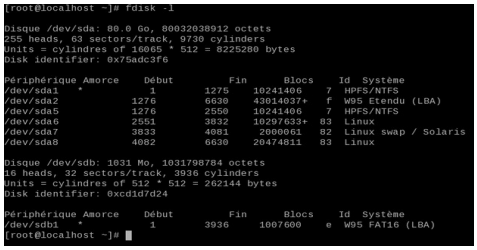
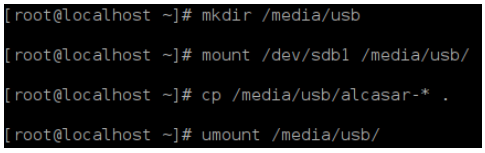
## Download the ALCASAR installation file

This file is an archive file named : alcasar-x.y.tar.gz ('x.y' means the version number you want).
If you've installed Linux-Mageia with the ISO we specially create for ALCASAR (Mageiar), this file has already been uncompressed in the "/root/alcasar-x-y" directory. Go to the installation step.
In the other cases, you can download this file with two different ways (via HTTP or via a USB flash drive):

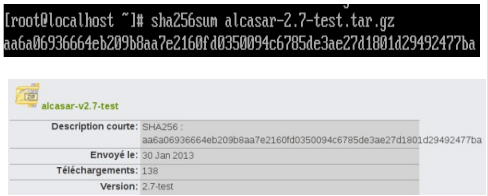
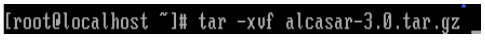
- Via HTTP : on the ALCASAR PC, download the last version stored on the server "ftp.alcasar.net"

| Screen display | Comments | Actions to achieve |
|---|---|---|
|  | | With a desktop PC, connect a Web browser to the server "ftp.alcasar.net" and look at the available ALCASAR installation files (in the folder "stable"). |
|  | On the ALCASAR computer, download the installation file you want. | *curl -O http://ftp.alcasar.net/stable/alcasar-x.y.tar.gz* |

- via a USB flash drive : From a Desktop PC, download the latest version of the ALCASAR (website or ftp.alcasar.net). Copy this file on an USB flash drive. Then, use the following procedure to copy it on the ALCASAR computer :

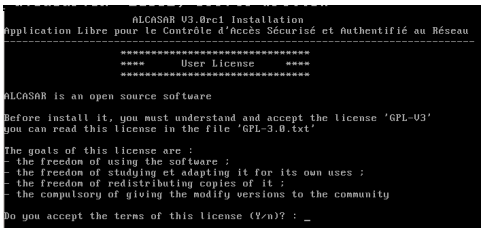
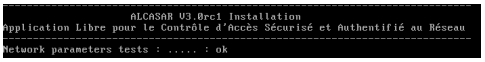
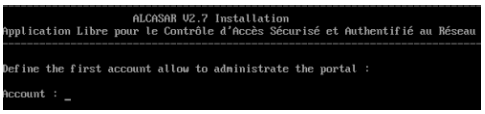
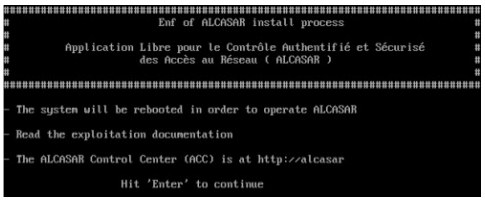
| Screen display | Comments | Actions to achieve |
|---|---|---|
|  | Insert the USB flash drive.<br><br>Display information on mass media storage to get the name of your USB flash drive. In this example, "/dev/sdb1" is a 1 GB USB flash drive. | *fdisk -l*<br><br>Info : You also can display the system log to get this name (journalctrl -f). |
|  | • Create a directory and mount the USB flash drive on it.<br>• Copy the archive of ALCASAR to the directory "/root".<br>• Unmount the USB flash drive.<br>• Unplug it. | *mkdir -p /media/usb*<br>*mount /dev/sdb1 /media/usb/*<br>*cp /media/usb/alcasar-* /root/*<br>*umount /media/usb*<br><br>Info : Replace "sdb1" with the device name retrieved in the previous step. |

## Decompression of the ALCASAR installation file

| | | |
|---|---|---|
|  | • Compute the SHA256 digital footprint of this installation file and compare it with that of the website. | *sha256sum alcasar-x.y.tar.gz*<br><br>Info : If the digital footprint doesn't match, download the archive again. If the problem occurs one more time, ask the developer team via the forum. |
|  | • Decompress this archive. | *tar -xvf alcasar-x.y.tar.gz* |

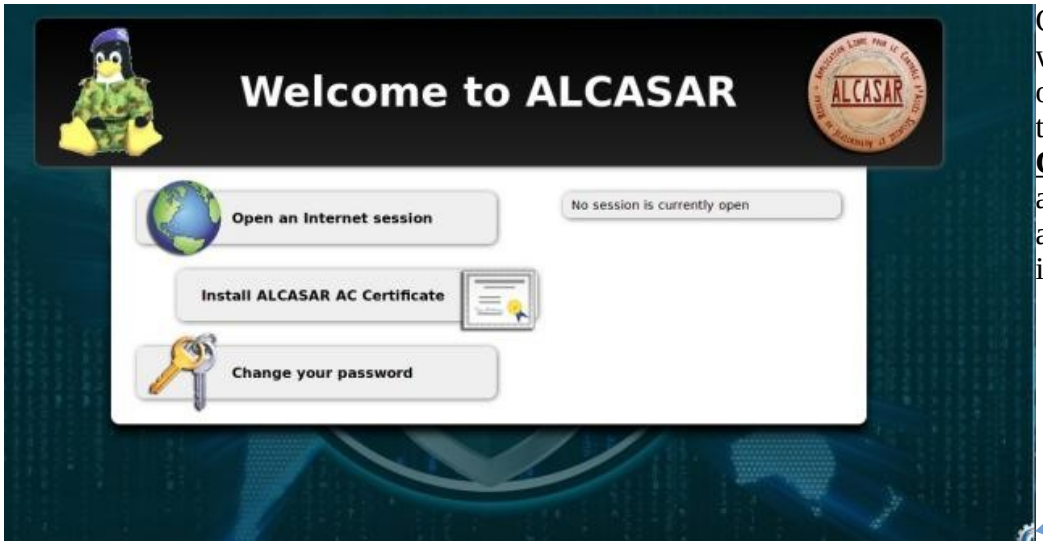
# Installation

If you want to update a previous version of ALCASAR, it's time to copy the configuration file of your previous version of ALCASAR in the folder "/*var/*tmp/" with the name "alcasar-conf.tar.gz".

| Screen display | Comments | Actions to achieve |
|---|---|---|
|  | Move to the directory of ALCASAR and run the installation script. | *cd alcasar-x.y*<br>*sh alcasar.sh -i* |
|  | Acceptation of the license | ALCASAR is a free software (open source) developed under the GPLV3 license. |
|  | The network configuration is tested. | |
|  | The installation of about a hundred software (packages) is done from the Internet. Estimated time : 3' | |
|  | Enter the name of your organization (without spaces) | Example : rasacla<br>Info : This name is mandatory. The only characters allowed are : [a-z] [A-Z] [0-9] [-] |
|  | Define the IP address of ALCASAR and the network addressing plan of the consultation network. You can accept the default one or change it. | Enter « Y » or « N »<br>Info : If you type "N", the script will ask you for the IP address of ALCASAR and the subnet mask in CIDR notation (ex: 172.16.0.1/16) |
|  | Enter the username and password for a first ALCASAR administrative account. | Info : This account is used to administer ALCASAR from the consultation network via the graphical control centers at the url "http://alcasar.localdomain". This is not a consultation user account. |
|  | The installation is complete.<br>The system can be rebooted. | Hit "Enter" |
|  | Once the system is restarted, login on the system as "root". You can check that all needed services are really started with the command "alcasar-daemon.sh".<br><br>Logout | If one or more services are not started, the script will attempt to start them.<br><br>Hit "exit" or "<CRTL> + d" |

## 2.4. Connection to the ALCASAR Control Center

On the consultation network, connect a PC and run a WEB browser with the URL "http://alcasar.localdomain" in order to display the following page :




Click on the small cranted wheel at the bottom right in order to connect via HTTPS to the **A**LCASAR **C**ontrol **C**enter (ACC). You must authenticate you with the first account created during the installation process.

You can also display this page by clicking the link in the explanation text of the user's interception page:


Now, read the exploitation documentation ("alcasar-exploitation-en.pdf") to create your first "user" accounts.

⚠ After a fresh installation, the pages presented to users are not encrypted (HTTP). The exploitation documentation explains how to change this behavior if desired (HTTPS).

# 3. Stop, uninstall or update ALCASAR

Stop: You can stop the ALCASAR computer with a brief push on the power button of the PC, or with the command « *poweroff* » or via the WEB ALCASAR Control Center (ACC – menu “system” + “services”).
Uninstall: You can uninstall ALCASAR with the command « *sh alcasar.sh --uninstall* ». This command uninstalls only ALCASAR. The operating system (Linux Mageia) is still present.
Update: If you launch again the installation script on an already installed ALCASAR, the script will ask you if you want to update or to install again (cf. §8 of the exploitation documentation).

# 4. Your ALCASAR settings sheet

The file « */root/ALCASAR-passwords.txt* » contains passwords used internally by the different modules of ALCASAR. It contains, more particularly, the password protecting the bootloader (« GRUB2 »). It can be consulted via the command « *cat /root/ALCASAR-passwords.txt* ». Be careful : when you enter the GRUB password, you keyboard is mapped like a “qwerty” keyboard.

| **Organization name :** | |
|---|---|
| Users authentication page | This page is presented automatically by their browser. |
| The welcome page of ALCASAR allows users:<br>• to log in or to log out<br>• to change their password<br>• to install the certificate of the Certification Authority (C.A.) in the browsers.<br><br>This page gives administrators access to the ALCASAR Control Center (ACC); | http://alcasar.localdomain<br><br>Info : The possibilities of the ALCASAR Control Center (ACC) are described in the "ALCASAR-exploitation-en.pdf" document. |
| Linux accounts | root password : .....<br>sysadmin password : ..... |
| First ALCASAR WEB administrative account | Login: ..... password : …..... |
| Network parameters<br>• IP address of the ISP's equipment (router) :<br>• IP address of DNS servers :<br><br>• IP address of ALCASAR (WAN/Internet side) :<br>• IP address of ALCASAR (LAN side) : | <br>• ____.____.____.____<br>• DNS1 :____.____.____.____<br>• DNS2 :____.____.____.____<br>• ____.____.____.____/___<br>• ____.____.____.____/___ |