





# **INSTALLATION**

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Project : ALCASAR	Author : Rexy with support of "Alcasar team". Thanks to translators.
Object : Installation	Version : 3.3.2
Keywords : Network Access Control (NAC), accountability, traceability, authentication, captive portal, parental control	Date : 2018, October

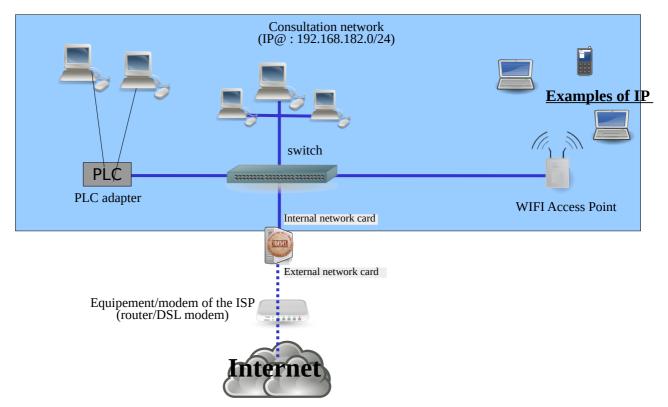
## 1. Introduction

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

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 (eth0) is connected to the Internet Service Provider equipment. The second one (eth1) is connected to the switch used to service the network consultation computers.

By default, the IP address of this second network card is : 192.168.182.1/24. This allows 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).



#### addressing plans

Parameters 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 1 ≤ x ≥ 255	65533	255.255.0.0	172.16.x.1/16	localdomain

Even if it is possible to define a class A 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 Mageia 6. The second step installs and configures all the components of ALCASAR.

#### 2.1. Hardware requirement

ALCASAR only requires one standard computer with two network cards and a hard drive with a capacity of at least 100 Go in order to be able to store logs related to connections tracing. Only 64b architectures are supported. 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 install at least 8 GB of RAM in order to ensure an acceptable processing speed (ALCASAR loves the RAM ;-) )

#### In case of using a Virtual Machine (VM): be sure that the size of the hard drive isn't smaller than 30G.

#### 2.2. Installation of the system

- The installation procedure of the operating system is the following (estimated time : 6') : Retrieve the Mageia-6 ISO image file for 64b architecture (file : « mageia-6-x86\_64-DVD.iso »). This ISO image is available on Mageia website as well as on several mirror sites of Mageia. For example :

  - <u>http://www.mirrorservice.org/sites/mageia.org/pub/mageia/iso/6/</u>
    <u>http://distrib-coffee.ipsl.jussieu.fr/pub/linux/Mageia/iso/6/</u>
    Burn this ISO image file on a DVDROM or create a bootable USB flash drive<sup>1</sup>. You can also use an
  - external USB disk which simulates a bootable device (ex : zalman zm-ve300 or 400); 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 the CD-ROM or the USB flash drive, reboot the computer and follow the instructions below :

Screen display	Comments	Actions to achieve
Boot from Hard Disk         Boot from Hard Di	After starting the computer, this screen is displayed. * 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.	Select "Install Mageia 6".
PLEASE CHOOSE A LANGUAGE TO USE       P Adia       > Africa       > Europe       - America       English (American)       English (American)       Español       Español       Español       Español       Español       Buna Simil       Runa Simil       Buna Simil       English (American)       English (Canada)       Español		Select your language.

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 (an 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
DEENSE ACREEMENT Introduction The operating system and the different components available in the Mageia distribution shall be called the "Software Products" hereafter. The Software and documentation related to the operating system and the different components of the Mageia distribution, and any applications distributed with these products provided by Mageia's licensors or supplies. I. License Agreement between equilibrium and thick applies to the Software Products any manner, you explicitly displicating or using any of the Software Products in any manner, you explicitly displicating or using any of the Software Products in any manner, you explicitly displicating or using any of the Software Products in any manner, you explicitly displicate or use the Software Products. Any attempt to install, duplicate or use the Software Products. Any attempt to install, duplicate or use		Accept the license agreement.
the Software Products in a manner which does not comply with the terms and Do you accept this license ?         O accept         Pelease Notes         Pele Quit Next		<u>Info</u> : this license agreement explains that the installed software is free (GPL).
KEYBOARD  Please choose your keyboard layout  Ovorak (US)  (Sossos-3 (US keyboard with 3 levels per key)  US keyboard  US keyboard (international)  More		Choose your keyboard layout.
PARTITIONING Here is the content of your disk drive ATA VBOX HARDDISK (8GB)	The hard disk partitioning will be adapted to the needs of ALCASAR (see next step).	Select "Custom disk partitioning".
PARTITIONING CElck on a partition, choose a filesystem type then choose an action sda Create	After removing all the partitions, create the following 5 or 6 partitions : ! Create the 1 <sup>st</sup> "/boot/efi" partition only on UEFI BIOS. • /boot/EFI/: 300MB (type "efi") • /: 5 GB (type ext4) • swap : keep the default size • /tmp : 5 GB (type ext4) • /home : 5 GB (type ext4) • /var : (type ext4) the rest of the hard drive (! size bigger than 10G even on a virtual machine).	Click on "Clear all". Then click on the area of the disk (sda) to create each new partition.
CREATE A NEW PARITHON Create a new parition Start sector:  Size in MB:  Filesystem type: Journalised FS: ext4  Mount point:  Encrypt parition Encryption key Encryption key Encryption key (again)	At the end of this operation, and depending on the size of your hard drive, the partitioning should look like this : sda / sda / d.Scs 3.6GB //ITTO //orr.s //scs //er / l2C5 Ext4 XFS Swap Windows Other Empty	<ul> <li>Create the root partition (/). Choose its size (5 Go) and its filesystem (ext4). Repeat this step for all the partitions.</li> <li>Once the partitioning completed, click on "Done".</li> </ul>
MEDIA SELECTION The following media have been found and will be used during install:	For ALCASAR, it does not need any other media.	Select "None" then click "Next"
MEDIA SELECTION Here you can enable more media if you want. Some hardware on your machine needs some non free firmwares in order for the free software drivers to work. You should enable "Nonfree Release" © Core Release © Nonfree Release		Leave the "Nonfree Release" media enabled then click "Next"

Screen display	Comments	Actions to achieve
DESKTOP SELECTION         You can choose your workstation desktop profile. Click on images in order to see a bigger preview         Image: Second seco	ALCASAR doesn't need a graphical environment (it is controlled from a WEB browser)	Select "Custom" then click "Next"
PACKAGE GROUP SELECTION         > Workstation         > Server         > Graphical Environment         Individual package selection         Total size: 1521 / 3464 MB         Image: Help       Unselect All	Package group selection : ALCASAR only requires a very minimal install.	Select "Unselect All" then click "Next". <u>Info:</u> On Linux, a package is an archive file containing all the components of a software (binary files, help files, configuration files, etc.).
TYPE OF INSTALL         With X         Install recommended packages         With basic documentation (recommended!)         Truly minimal install (especially no urpmi)		Select only "Install recommended packages" and the basic documentation, then click "Next". The copy of the packages is launched. Estimated time : 2'
USER MANAGEMENT     Set administrator (root) password  Password (again)  Enter a user  Icon Real name sysadmin Login name sysadmin Password (again)  Password (again)		Assign a password to the "root" account, then, create the "sysadmin" account and assign it a password.
SUMMARY   System  Timezone - America/New_York Configure Country / Region - United States Bootloader - grub-graphic on /dev/sda Configure User management Configure Services - 12 activated for 16 registered Hardware	Configuration of your timezone and your country	In the group "System", click on "Configure" in "timezone" section then in "Country" section. Select your timezone and your country.
SUMMARY User management Configure Services - 11 activated for 13 registered Configure + Hardware Mouse - Universal Any P5/2 & USB mice Configure Caraphical interface - not configured Configure • Network: & Internet Network: & Internet Proxies - not configure • Security Firewall - activated Configure		Click on "Configure" in "Network- ethernet" in the "Network & Internet" section.

Screen display	Comments	Actions to achieve
NETWORK & INTERNET CONFIGURATION Choose the connection you want to configure Wred (Ethernet) Satellite (DVB) Cable modern DSL ISDN Wireless (Wi-Fi) GPRS;#Gge;IG Bluetooth Dial Up Networking Analog telephone modern (POTS)		Select the type of Internet connection. In the case of the use of an ISP broadband modem, choose "Wired (Ethernet)". Info: no test has yet been made on other types of Internet access.
NETWORK & INTERNET CONFIGURATION Ethernet Select the network interface to configure: enp0s8: Intel Corporation 82540EM Gigabit Ethernet Controller enp0s3: Intel Corporation 82540EM Gigabit Ethernet Controller	At that time, only the interface connected to the broadband modem of the ISP has to be configured. The second interface, connected to the consultation network, will be configured later, during the installation of ALCASAR.	Select the interface to configure. <u>Tips</u> : Choose the interface with the smallest index. <u>Write the name of this interface on a paper</u> . <u>Info</u> : the names of interfaces are linked with the physical architecture of your PC. They could differ from the printscreen.
NETWORK & INTERNET CONFIGURATION  Ethernet  Please select your connection protocol.  If you do not know it, keep the preselected protocol.  Automatic IP (BOOTP/DHCP)  Manual configuration		Select "Manual configuration" <u>Info :</u> While it is possible to let this interface in "bootp/dhcp" mode, we recommended configuring it manually in static mode.
NETWORK & INTERNET CONFIGURATION           Ethernet           IP address           19.168.0.100           Netmask           255.255.255.0           Gateway           192.168.0.254           DNS server 1           208.67.222.222           DNS server 2           208.67.220.220           Host name	<ul> <li>Example :</li> <li>IP address : this address must be in the same subnet as the address of the broadband modem.</li> <li>Netmask : 255.255.255.0</li> <li>Gateway : This is the address of the broadband modem</li> <li>DNS 1 and DNS 2 :*</li> <li>Host name : Leave the default value (or blank)</li> </ul>	<ul> <li>Enter the parameters of this interface</li> <li>* Enter the IP addresses of the DNS servers provided by your ISP. You can also use other DNS servers. Examples:</li> <li>Free project "<u>OpenNic</u>" (see the web site to know the closest servers for you)</li> <li>project "OpenDNS" (DNS1=208.67.222.222, DNS2=208.67.220.220)</li> <li>google (DNS1=8.8.8.8, DNS2=8.8.4.4).</li> </ul>
NETWORK & INTERNET CONFIGURATION Ethernet Connection control Allow users to manage the connection Start the connection at boot Enable traffic accounting Allow interface to be controlled by Network Manager Automatic		Select only "Start the connection at boot"
NETWORK & INTERNET CONFIGURATION     Do you want to start the connection now?     Yes     No	It is not necessary to start the connection now.	Select "No"
NETWORK & INTERNET CONFIGURATION Congratulations, the network and Internet configuration are finished.		Click on "Finish"
SUPANARY User management Configure Services - 11 activated for 13 registered Configure + Hardware Kayboard - Prench Configure Graphical interface - not configure Configure + Network & Internet Network - network:connection::ethernet Provies - not configure • Security Firewall - activated Configure  D Help Next		Click on "Next"

Screen display	Comments	Actions to achieve
UPDATES         You now have the opportunity to setup online media.         This allows to install security updates.         To setup those media, you will need to have a working internet connection.         Do you want to setup the update media?         Yes         Image: No	Security updates will be managed during the installation of ALCASAR.	Select "No" and click on "Next"
CONCINTUATIONS Congratulations, installation is complete. Remove the boot media and press Enter foreboot. For information on fixes which are available for this release of Mageia, consult the Errats available from: http://www.mageia.org/ Information on configuring your existem is available in the post install chapter of the Official Mageira User's Guide.  Itelp  Help  He	The installation is finished.	Click on "Reboot" Remove the CDROM or the USB flash drive. 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
Mageia release 6 (Official) for x86_64 Rernel 4.9.35-desktop-1.nga6 on a x86_64 / tty1 localhost login: root Password:	Disconnect the cables of the two network cards. Log in as root	
		ethtool -p enp0s3
	Run the blinking of the LED of the network card configured previously.	On this blinking interface, connects the cable linked to the ISP broadband modem (Internet access).
	Stop the blinking	<ctrl> + c Info: replace "enp0s3" with the name of the network card you've configured previously (see Page 5). The commands « ifconfig » or « ip link » display the name of all the network card connected in your PC.</ctrl>
Link detected: yes	Verify that the link is up on this interface.	watch ethtool enp0s3 Info: the last line display the link state (Link detected <yes no="">) Wait until the link is up. Otherwise, plug the cable into the other network card. When the link is detected, stop the command with the <math><ctrl> + c</ctrl></math> keys</yes>
	Do the same operation with the second card (eth1) and the cable connected to the consultation network.	watch ethtool xxxxxx Info: On the consultation side, connect a network equipment (Ethernet or PLC switch, WIFI AP, etc.) to ensure a permanent network link even if all consultation stations are off.
<pre>[root@localhost -]# ping -c3 www.google.fr PING www.google.fr (216.58.211.99) 56(84) bytes of data. 64 bytes from par03515-in-r99.le100.net (216.58.211.99): icmp_s 64 bytes from par03s15-in-r99.le100.net (216.58.211.99): icmp_s 64 bytes from par03s15-in-r99.le100.net (216.58.211.99): icmp_s  www.google.fr ping statistics 3 packets transmitted, 3 received, 0% packet loss, time 2003ms rtt min/avg/max/mdev_= 28.971/29.768/30.546/0.658 ms</pre>	Test your Internet connectivity	ping -c3 www.google.com

<u>Download the installation file</u> This file is an archive file named : alcasar-x.y.tar.gz ('x.y' means the version number you want). You can download it in two different ways (USB flash drive or FTP) :

<u>via an USB flash drive</u>: Download the latest version available on the ALCASAR website and copy it on an USB flash drive. Then, use the following procedure to copy it on ALCASAR computer :

Screen display	Comments	Actions to achieve
[root@localhost -]# fdisk -] Disque /dev/sda: 80.0 60. 80032030012 octets 1255 heads, 63 sectors/track, 9730 cylinders antis = cylindres of 10600 ' 512 × 8225280 bytes Disk identifiaer: 0x70000 ' 512 × 822580 ' 512 × 822580 ' 512 × 825 Disk identifiaer: 0x70000 ' 512 × 82580 ' 512 × 82580' 5120' 5120' 5120' 5120' 5120' 510000' * 90000' * 90000' 510000' * 90000' 510000' * 90000' 51000'	Insert the USB flash drive. 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.	<b>fdisk -l</b> Info : You also can display the system log to get this name (journalctrl -f).
[root@localhost ~]# mkdir /media/usb [root@localhost ~]# mount /dev/sdb1 /media/usb/ [root@localhost ~]# cp /media/usb/alcasar-* . [root@localhost ~]# umount /media/usb/	<ul> <li>Create a directory and mount the USB flash drive on it.</li> <li>Copy the archive of ALCASAR to the directory "/root".</li> <li>Unmount the USB flash drive.</li> <li>Unplug it.</li> </ul>	mkdir -p /media/usb mount /dev/sdb1 /media/usb/ cp /media/usb/alcasar-* /root/ umount /media/usb Info : Replace "sdb1" with the device name retrieved in the previous step.

via FTP : directly from the ALCASAR computer, download the archive file from the FTP server : •

Screen display	Comments	Actions to achieve
froot@localhost ~]# iftp ftp.alcasar.net/pub d ok, cud=~pub iftp ftp.alcasar.net:/pub> cd stable d ok, cud=~pub>table iftp ftp.alcasar.net:/pub>table> ts -rw-rr 1 root root 8755182.60 ct 16 05:35 alcasar=2.8.1.tar.gz -rw-rr 1 root root 8757182.dan 27 2014 alcasar=2.8.tar.gz iftp ftp.alcasar.net:/pub>table> get alcasar=2.8.tar.gz iftp ftp.alcasar.net:/pub>table> get alcasar=2.8.tar.gz iftp ftp.alcasar.net:/pub>table> get alcasar=2.8.tar.gz iftp ftp.alcasar.net:/pub>table> bye (root@localhost ~]#	<ul> <li>Connect to the FTP server with the "lftp" command</li> <li>change to the directory "pub" then "stable" and list its content</li> <li>download the archive file</li> <li>quit</li> </ul>	cđ pub

#### **Installation**

Screen display	Comments	Actions to achieve
IrootRlocalhost ~]# sha256sun alcasar~2.7-test.tar.gz           aa6a86936664eb209b8aa7e2160fd0350094c6785de3ae27d1801d29492477ba           Image: star.v2.7-test           Description courte:           BHA256 :           Description courte:           B	• Compute the SHA256 digital footprint of this archive and compare it with that of the website.	sha256sum alcasar-x.y.tar.gz 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.
[root@localhost ~]# tar -xvf alcasar-3.0.tar.gz _ [root@localhost ~]# cd alcasar-1.3.0/ [root@localhost alcasar-1.3.0]# _	<ul> <li>Decompress and extract this archive.</li> <li>Move to the directory of ALCASAR and run the installation script.</li> </ul>	tar -xvf alcasar-x.y.tar.gz cd alcasar-x.y sh alcasar.sh -i
ALCASOR V3.8-c1 Installation Application Libre pour le Contrôle d'Accès Sécurisé et Authentifié au Réseau User License **** ALCASOR is an open source software Before install it, you must understand and accept the license 'GPL-V3' you can read this license in the file 'GPL-3.0.txt' The yoals of this license are : - the freedom of using the software ; - the compulsary of giving the modify versions to the community Do you accept the terms of this license (Yzn)? : _	Acceptation of the license	ALCASAR is a free software (open source) developed under the GPLV3 license.
MLCASAR V3.0rc1 installation Application Libre pour le Contrôle d'Accès Sécurisé et Authentifié au Néseau Metwork parameters tests : ; ok	The network configuration is tested.	
Installation de php-ctype-5.1.6-1ndv2007.0.1506.eyn Préparation T3:100: shp-ctype installation de php-ftp-5.1.6-1.1ndv2007.0.1506.eyn Préparation Sango Sango Totol and Sango Totol and Sango Tot	The installation of about a hundred software (packages) is done from Internet. Estimated time : 3'	
ALCASAR V2.7 Installation Application Libre pour le Contrôle d'Accès Sécurisé et Authentifié au Réseau Enter the name of your organism :	Enter the name of your organization (without spaces)	Example : rasacla Info : <u>This name is mandatory</u> . The only characters allowed are : [a-z] [A-Z] [0-9] [-]
MLCADAN UZ. 7 Installation Application Libre pour le Contrôle d'Accès Sécurisé et Authentifié au Réseau The default ALCASAN IP address on consultation network is : 192.108.102.1.24 De gou aunt to use this IP address and this IP addressing plan (recommended) (Yrn)? : n Enter ALCASAN IP address in CLDN Format (a.b.c.drac) : 172.16.0.1.24	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 » 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)
ALCASAR U2.7 Installation Application Libre pour le Contrôle d'Accès Sécurisé et Authentifié au Réseau Befine the first account allow to administrate the portal : Account : _	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 " <u>http://alcasar.localdomain</u> ". This is not a consultation user account.
Application Libre poor Ic Controle authentifié et Sécurisé     Application Libre poor Ic Controle authentifié et Sécurisé     des Accès au Réseau (ALCASAR)     a  - The system will be rebooted in order to operate ALCASAR - Read the exploitation documentation - The ALCASAR Control Center (ACC) is at http://alcasar Hit 'Enter' to continue	The installation is complete. The system can be rebooted.	Hit "Enter"
alcasar-rexy-un:"# alcasar-daenon.sh 20 services needed by ALCASAB are started. All is ok alcasar-rexy-un:"# _	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".	If one or more services are not started, the script will attempt to start them.
	Logout	Hit "exit" or " <crtl> + d"</crtl>

### 2.4. Connexion to the ALCASAR Control Center

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



Click on the small cranted wheel at the bottom right in order to connect to the <u>A</u>LCASAR <u>C</u>ontrol <u>C</u>enter (ACC). You must authenticate you with the first account created during the installation process (§2.3 – P9 of this document).

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

## 3. Stop, uninstall or update ALCASAR

<u>Stop:</u> 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"). <u>Uninstall:</u> You can uninstall ALCASAR with the command « *sh alcasar.sh --uninstall* ». This command uninstalls only ALCASAR. The operating system (Linux Mageia) is still present.

<u>Update</u>: 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. You can perform a remote update via SSH connection (cf. Exploitation doc).

## 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 :**

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Users authentication page	This page is displayed when a browser tries to access a <b>HTTP</b> website.
<ul> <li>The welcome page of ALCASAR allows:</li> <li>to access the ALCASAR Control Center.</li> <li>log the users out</li> <li>change the users password</li> <li>install the certificate of the Certification Authority (C.A.) in the browsers.</li> </ul>	http://alcasar.localdomain Info : The possibilities of the ALCASAR Control Center (ACC) are described in the "ALCASAR-exploitation-en.pdf" document.
Linux accounts	root password : sysadmin password :
First ALCASAR WEB administrative account	Login: password :
<ul> <li>Network parameters</li> <li>IP address of the ISP's equipment (router) :</li> <li>IP address of DNS servers :</li> <li>IP address of ALCASAR (WAN/Internet side) :</li> <li>IP address of ALCASAR (LAN side) :</li> </ul>	• <u>DNS1</u> : · · · · · · · · · · · · · · · · · · ·