



USER MANUAL

This document describes how to administer ALCASAR with the ALCASAR Control Center (ACC) or by using Linux command lines.

Project : ALCASAR	Author : Rexy and 3abtux with support of « ALCASAR Team ». Thanks to the main translator (Clément).
Object : User manual	Version : 2.9
Keywords : captive portal, access control, accountability, traceability, authentication	Date : 2015 February

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1. Introduction

ALCASAR is a free and open-source Network Access Controller (NAC). This paper describes how to use it and how to administer it.

The following screenshot is displayed for users attempting to access an **HTTP** website. This page is available in English, Spanish, German, Dutch, French and Portuguese depending on the browsers settings. As long as the user is not logged in, no traffic will pass through ALCASAR.



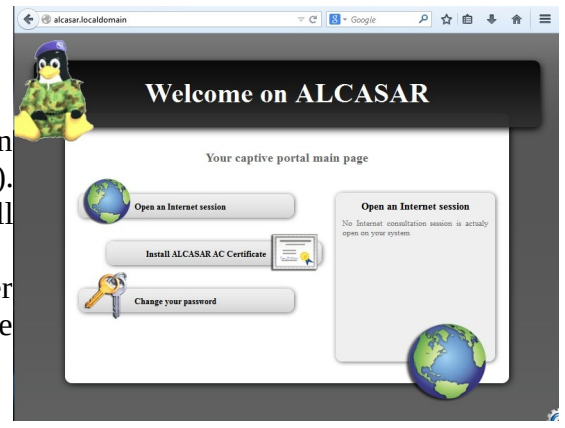
Information System Security

- That control was set up regulations to ensure traceability, accountability and non-repudiation of connections.
- The recorded data can be able to be operated by a judicial authority in the course of an investigation.
- Your activity on the network is registered in accordance with privacy.
- These data will be automatically deleted after one year.
- Click [here](#) to change your password or to integrate the security certificate in your browser

Sécurité des Systèmes d'Information

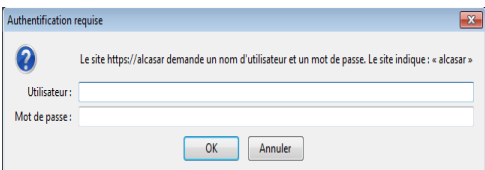
- Ce contrôle a été mis en place pour assurer réglementairement la traçabilité, l'imputabilité et la non-répudiation des connexions.
- Les données enregistrées ne pourront être exploitées que par une autorité judiciaire dans le cadre d'une enquête.
- Votre activité sur le réseau est enregistrée conformément au respect de la vie privée.
- Ces données seront automatiquement supprimées au bout d'un an.
- Cliquez [ici](#) pour changer votre mot de passe ou pour intégrer le certificat de sécurité à votre navigateur

The homepage of the portal is available for any browser connected on the network. The URL is <http://alcasar> (or <http://alcasar.localdomain>). From there, users can log on, log out, change their password and install the security certificate into their web browsers. Administrators can access the graphical ALCASAR Control Center (A.C.C) by clicking the little notched wheel at the bottom right of the page (or via <https://alcasar.localdomain/acc>).



This ACC is available in two languages (English and French) via an encrypted flow (HTTPS). An authentication is required with a login name in one of the three following profiles (cf. §7.1) :

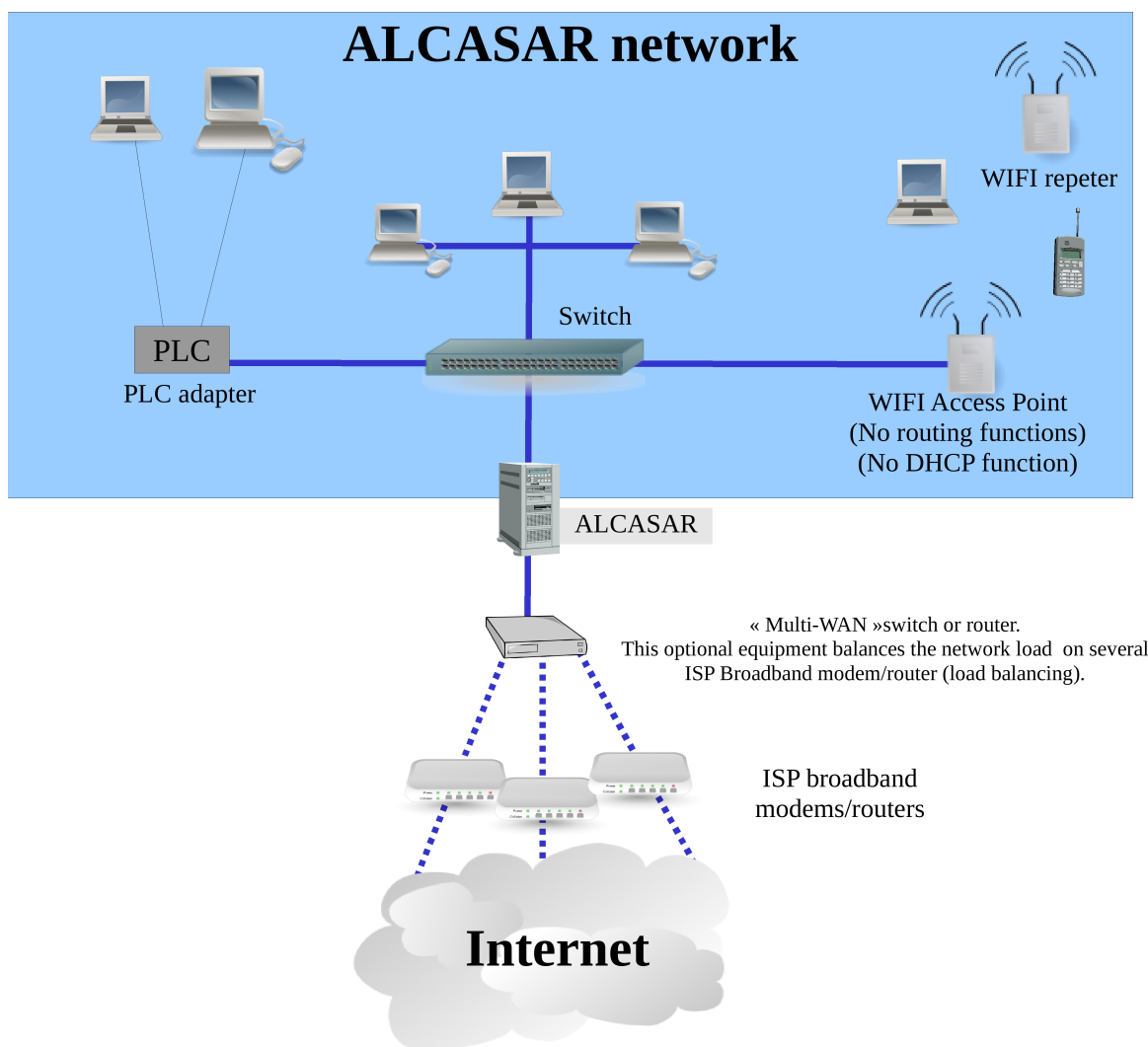
- profile « admin » can use all the administration functions ;
- profile « manager » is limited to user management functions ;
- profile « backup » is limited to a backup (of the log files) function.



Warning : The intrusion detection system of ALCASAR will forbid new connection attempts during 3' if it detects three connection failures on ACC.

Mount	Type	Partition	Percent Capacity	Free	Used	Size
/	ext4	/dev/sda1	50%	880.09 MB	980.48 MB	1.91 GB
/tmp	ext4	/dev/sda6	2%	1.78 GB	34.97 MB	1.91 GB
/home	ext4	/dev/sda7	2%	1.88 GB	34.95 MB	1.91 GB
/var	ext4	/dev/sda8	12%	1.11 GB	158.09 MB	1.33 GB

2. Network settings



On the ALCASAR network, devices can be connected with multiple technologies (wired Ethernet, WiFi, PCL, etc.). For all these devices, ALCASAR is the DNS, the time server and the default gateway.

⚠ CAUTION: On the consultation network, no other gateway should be present (verify the PLC and WIFI Access Point settings).

The IP address setting of the network is defined during the installation process of the portal.

For example, with a class C network (default configuration)

- Network IP Address : 192.168.182.0/24 (sub-net mask : 255.255.255.0) ;
- Max number of devices : 253 ;
- ALCASAR eth1 IP address : 192.168.182.1/24 ;
- Parameters of connected devices :
 - available IP addresses : between 192.168.182.3 and 192.168.182.254 (static or dynamic) ;
 - DNS server address : 192.168.182.1 (ALCASAR IP address) ;
 - DNS suffix : localdomain (this DNS suffix must be set in the static address setting of the client device) ;
 - Default gateway IP address : 192.168.182.1 (ALCASAR IP address) ;
 - network mask : 255.255.255.0

2.1. ALCASAR settings

You can change ALCASAR network settings in the « system » + « network » menu.

a) IP configuration

The screenshot shows the 'Network configuration' interface. It is divided into three main sections:

- INTERNET** (with a green checkmark):
 - Public IP address : [redacted]
 - DNS1 : [redacted]
 - DNS2 : [redacted]
- Eth0 (Internet connected interface)**:
 - IP Address : 192.168.0.1/24
 - Gateway : 192.168.0.254
- Eth1 (Private network)**:
 - IP Address : 192.168.182.1/24

Currently, these parameters cannot be modified directly with the ACC. Nevertheless, you can change them in a text console by editing the file « `/usr/local/etc/alcasar.conf` ». When modifications are made, apply them with the command line « `alcasar-conf.sh --apply` ».

b) DHCP server

The screenshot shows the 'DHCP service' configuration interface. It includes the following elements:

- Current mode**: enabled
- A dropdown menu set to 'enabled' and an 'Apply changes' button.
- A warning message: '! Before disabling the DHCP server, you must write the extern DHCP parameters in the config file (see Documentation)'
- Static IP addresses reservation** section containing a table:

MAC Address	IP Address	Delete from list
[redacted]	192.168.182.2	<input type="checkbox"/>
[redacted]	192.168.182.3	<input type="checkbox"/>
[redacted]	192.168.182.4	<input type="checkbox"/>
[redacted]	192.168.182.5	<input type="checkbox"/>

Below the table is an 'Apply changes' button. To the right of the table is a form for adding new reservations:

MAC Address	IP Address
exemple : 12-2f-36-a4-df-43	exemple : 192.168.182.10
<input type="text"/>	<input type="text"/>

An 'Add' button is located to the right of the input fields.

The DHCP (Dynamic Host Control Protocol) server provides IP settings to client devices connected on the network.

You can reserve IP addresses for devices that need static IP addresses (servers, printers, WiFi AccessPoint). Be sure that no other DHCP server is connected on your network. Or be sure to well knowing how manage multi-DHCP service (cf. §8.5a to manage the cohabitation with a A.D. © server).

2.2. Client devices settings

a) Client device setting

A “User sheet” is available at the end of this manual.

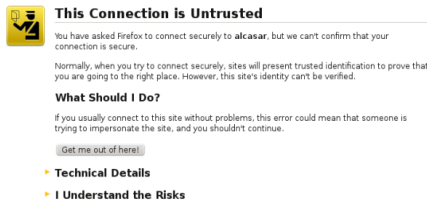
Users only need a system in **DHCP mode** and a browser supporting « JavaScript » and « pop-up » windows. To be intercepted by ALCASAR, browsers must try to access a **HTTP** (and only HTTP) website. The **proxy** server settings must be **disabled**.

b) Adding bookmark

On browsers, it can be useful to add ALCASAR homepage (<http://alcasar>) to bookmarks in order to allow users to change their password, to log out or to install the ALCASAR security certificate.

c) Installing the ALCASAR security certificate

Some communications between client devices and ALCASAR are encrypted with SSL (Secure Socket Layer) protocol. This protocol needs two certificates created during the installation: the ALCASAR certificate and the local Certification Authority (C.A.) certificate. By default, browsers don't know this certification authority. So, one of the following page is displayed when they connect to the portal for the first time.



« Mozilla-Firefox »

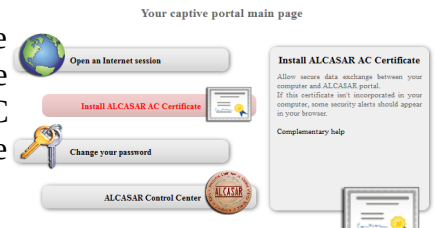


« Microsoft-I.E. »

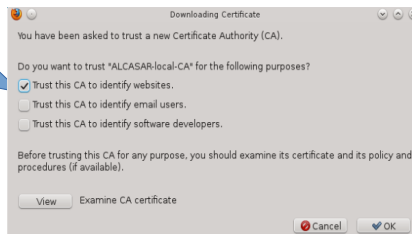


« Google-chrome »

Although it is possible to continue to browse, it is recommended to install the security certificate of this C.A. in browsers so that they don't display these pages anymore¹. To do that, click the zone « Install ALCASAR AC certificate » of the ALCASAR homepage. For each browser, follow the following steps :



Select « Trust this CA to identify websites ».

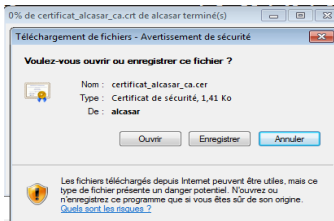


Select : « Open in Kleopatra ».

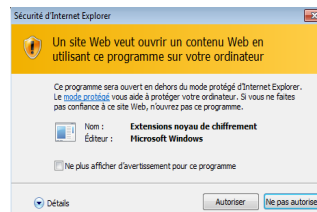


« Mozilla-Firefox »

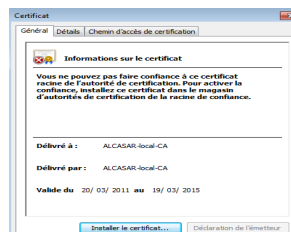
Konqueror



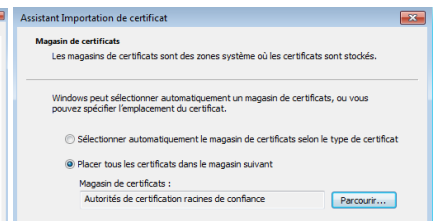
1 – click « open »



2 – click « authorize »



3 – click « install the certificate »



4 – Choose the store « Trusted root certification authorities »

« Internet Explorer 8 » and « Safari »

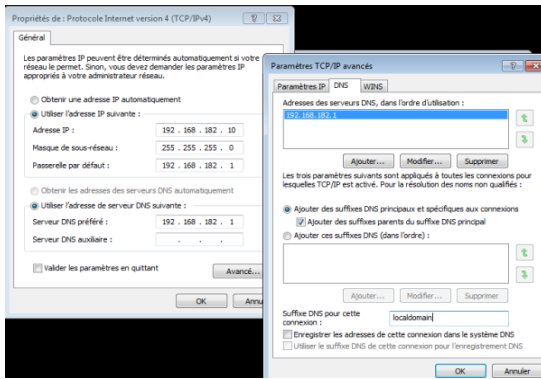
« Google chrome »: Google Chrome saves the certificate locally (« *certificat_alcasar_ca.crt* »). Select « preferences » in the configuration menu, then « advanced options », then « manage certificates » and then « import » in the tab « Authorities ».

¹ You can avoid this manipulation either in buying and including in ALCASAR an official certificate which is known by all web browsers (see §8.4), or in disabling the encryption of authenticating flow with the script « *alcasar-https.sh {--on|--off}* ». Disabling the encryption means that you perfectly manage your ALCASAR network (see §11).

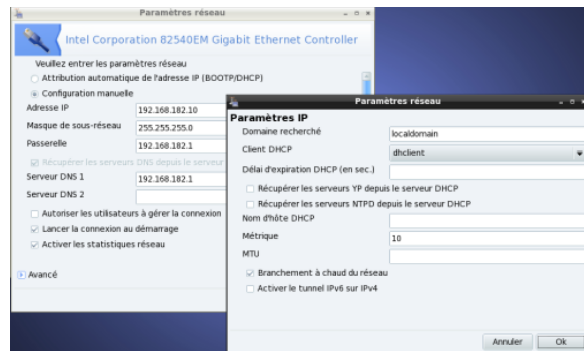
d) Network configuration in static mode (servers, printers, WIFI access points, etc.) :

For these devices, the required parameters are the following :

- default gateway : IP address of the eth1 network interface of ALCASAR ;
- DNS server : IP address of the eth1 network interface of ALCASAR ;
- DNS suffix : **localdomain**



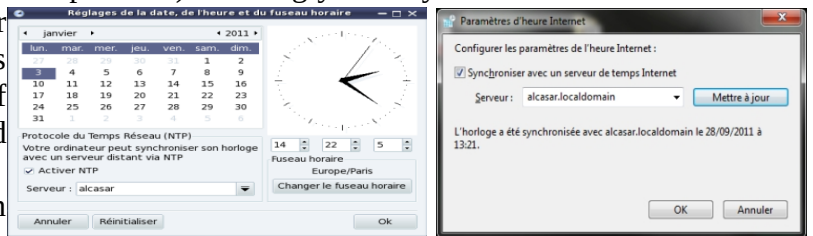
« Windows Seven »



« Mandriva & Mageia Linux »

e) Time synchronization

ALCASAR includes a network time server (« NTP » protocol) allowing you to synchronize devices connected to the ALCASAR network. Thus, on Windows or on Linux, you can define ALCASAR server as the time server by right clicking on the clock of the desktop. Enter « alcasar » on Linux and « alcasar.localdomain » on Windows.



Note: All NTP flows from consultation network are redirected to ALCASAR.

3. Managing users and their devices



User management interface is available in the menu « AUTHENTICATION »). You can :

- display the network activity. Disconnect a user.
- create, search, modify and remove a user or user group ;
- import user names from a text file or from a user database backup ;
- empty the user database ;
- define trusted client devices allowed to connect to the Internet without authentication (exceptions).

3.1. Network activity

Activité sur le réseau de consultation
Cette page est rafraîchie toutes les 30 secondes

#	Adresse IP	Adresse MAC	Usager	Action
1	192.168.182.100	00-21-97-6B-57-E5	[REDACTED]	Déconnecter
2	192.168.182.173	00-02-72-85-75-ED	[REDACTED]	Déconnecter
3	192.168.182.130	00-16-EA-58-9B-04	[REDACTED]	Déconnecter
4	192.168.182.131	00-16-6F-A1-EB-DB	[REDACTED]	Déconnecter
5	192.168.182.137	00-1A-A0-2F-10-D0	@MAC autorisée	
6	192.168.182.162	00-24-01-0B-95-CB		Dissocier
7	192.168.182.132	00-24-2B-71-24-1C		Dissocier
8	192.168.182.165	00-0F-3D-67-E2-48		Dissocier

A connected user device. You can log out him or click on his name to view his profile

Device allowed to browse the Internet without authentication on ALCASAR (trusted device - see §4.7.c)

Device connected on the ALCASAR network but with no user authenticated. You can remove this record (disassociate). It is required if you want to change the device's static IP address or when a client device has a wrong IP address.

3.2. Creating groups

Generally, in order to minimize the administration load, it's interesting to manage user group instead of each user. For that, the first thing to do is to define the list of user group to create.

When you create a user group, you can define attributes of all the users of this group. These attributes are taken into account only if they are not empty. Thus, let the attribute empty if you don't want to use it. For assistance, click on the attribute name.

Create a group	
Already created group(s)	The group list is empty
Group name	<input type="text"/>
Members of group : (separate by a 'space' or a 'carriage return')	<input type="text"/>
Expiration date	:= <input type="text"/>
Maximum time of connection (in seconds)	:= <input type="text"/> S
Maximum time for a session (in seconds)	= <input type="text"/> S
Maximum time of connection per day (in seconds)	:= <input type="text"/> S
Maximum time of connection per month (in seconds)	:= <input type="text"/> S
Number of concurrent login	:= <input type="text"/>
Weekly period	:= <input type="text"/>
Maximum of data uploaded (in octets)	= <input type="text"/>
Maximum of data downloaded (in octets)	= <input type="text"/>
Maximum of data exchanged (in octets)	= <input type="text"/>
Maximum upload bandwidth (in kbits/second)	= <input type="text"/>
Maximum download bandwidth (in kbits/second)	= <input type="text"/>
Redirection URL	= <input type="text"/>
Filtering	:= <input type="text"/> <ul style="list-style-type: none"> None Antivirus Blacklist+ antivirus Whitelist+ antivirus

The name is case sensitive (« group1 » and « Group1 » are two different names) and can't contain any accents or special characters.

Expiry date
After this date, users of this group can't log in anymore. A week after this date, users will be automatically deleted. Click on the zone to see a calendar.

Maximum time of connection
This time of connection is independent from the number of sessions. Thus, the user can spend this time as he wants (in one or more sessions).

Limit of time
When one of these limits is reached, the user is logged out.

Number of concurrent session per user
Examples : 1 = only one session at a time, « empty » = no limit, X = X authorized concurrent sessions, 0 = account locked.
Note : It's a good way to temporarily lock or unlock a user account

Authorized periods in a week
Example for a period from Monday at 7 am to Friday at 6 pm :
Mo-Fr0700-1800

5 quality of service parameters (QoS)
You can set limitations.
Data volume limit is set for one session. When the limit value is reached, the user is logged out.

URL redirection
Once authenticated, the user is redirected to this URL. The URL must contain the protocol name. Example :
« http://www.site.org »

Filtering
Choose the filtering policy. See §4 for more explanations about the blacklist, whitelist and antivirus filtering system.

Page d'aide : session simultanée

Cet attribut définit le nombre maximum de sessions simultanées qu'un usager peut ouvrir (non renseigné = infini)
This attribute defines the maximum number of concurrent logins for a user. It is independent from the number of ports the user is allowed to open in a multilink session.

Close Window

For assistance, click on the attributes name.

3.3. Editing and removing a group

Click the name of the group to edit it

Liste des groupes		
#	groupe	Nombre d'utilisateurs
1		13
2		2
3		4
4		7
5		7
6		11
7		164
8		186
9		136
10		149
11		158

Group : classroom1 (-)

Remove all members of this group:

Are you sure to remove classroom1?

Groups management

MEMBERS	ATTRIBUTES	REMOVE
Group : classroom1		
Members to remove: The selected members will be remove from the group. Use 'shift' or 'Ctrl' for multiple selection.		classroom1 lulu paulo sophie
Members to add: Separate the members with a 'space' or a 'carriage return'.		
<input type="button" value="Change"/>		
<input type="button" value="Manage the selected user"/>		

3.4. Creating users

Login and password are case sensitive
(« James » and « james » are two different users)

If you choose a group, the user inherits its attributes*.

* When an attribute is defined both for user and for his group (example : "maximum time" for a session), user attribute takes precedence over group attribute.

* When a user is member of several groups, you can set his primary group in the user attributes window (see next §).

* When an attribute prevents a user to log in, a message is displayed in his login window (see « user sheet » at the end of this manual).

see the previous chapter to get details on attributes

Login	<input type="text"/>
Password	<input type="password"/> <input type="button" value="generate"/>
Group	The group list is empty
Surname and name	<input type="text"/>
Email Address	<input type="text"/>
Expiration date	<input type="text"/>
Authorized period after the first connection (in seconds)	s ▾
Number of concurrent login	1
Filtering	None ▾
Voucher language	Français ▾
<input type="button" value="Create"/>	
Advanced menu	

or:

Note: when creating multiple tickets simultaneously :
- username and password are randomly generated,
- fields "Surname and name" and "Email Address" are not use.

To see/hide all attributes

When the users are created, PDF vouchers are generated in the language of your choice.



Enter the number of users to create

If you create multiple users, it's interesting to fix an expiration date (see the remark below)

Remark : if an expiration date is enabled, one week after this date, the user is automatically deleted. When a user is deleted from the database, his connections logs are kept in order to be able to impute his connections.

3.5. Searching and editing users

You can search users with several criteria (login name, attributes, etc.). If you leave the criteria field blank, all users will be listed.

Search filter

Search criteria: Login

Value (empty = all):

Start search

Search filter

Search criteria: Special attribute

Attribute: Expiration date

Value (empty = all):

- Expiration date
- Maximum time of connection(in seconds)
- Maximum time for a session(in seconds)
- Maximum time of connection per day(in seconds)
- Maximum time of connection per month(in seconds)
- Number of concurrent login
- Weekly period
- Maximum of data uploaded(in octets)
- Maximum of data downloaded(in octets)
- Maximum of data exchanged(in octets)
- Maximum upload bandwidth(in kbits/second)
- Maximum download bandwidth(in kbits/second)
- Redirection URL

Start search

The result is a list of users matching your search criteria. Each user's toolbar includes the following functions :

User attributes

Préférences du dupont (DUPONT Loïc)

Mot de passe (modification uniquement):

Le mot de passe existe

Durée limite d'une session (en secondes): 3600

Durée limite journalière (en secondes): 10800

Durée limite mensuelle (en secondes):

Période hebdomadaire: Wk0800-1700

Date d'expiration: 20 June 2009

Membre de: clrisi paul

Change

Personal information

Page d'information personnelle de dupont (DUPONT Loïc)

Nom complet (NOM Prénom): DUPONT Loïc

Mail: dupont@loic.fr

Service: comptabilité

Téléphone personnel: -

Téléphone bureau: 22020

Téléphone mobile: -

Modifier

Deleting a user

Suppression du User palette

Êtes-vous certain de vouloir supprimer le user palette ?

Oui supprimer

General information (connections list, statistics, password test, etc.)

Etat des connexions pour paulo ()

L'utilisateur est en ligne depuis: 2009-01-06 22:58:30

Durée des connexions: 00:01:26

Serveur: alcasar-rexy (192.168.182.1)

Port du serveur: 1

@MAC de la station cliente: 08-00-27-E7-EA-89

Upload: not available

Download: not available

Sessions autorisées: L'utilisateur peut s'identifier pendant **unlimited time**

Description complète de l'utilisateur: -

Check Password

Password: [input] check

Analyse

	mensuel	hebdomadaire	journalier	par session
limite	none	none	none	none
durée utilisée	-	0 seconds	0 seconds	00:00:17



Active sessions (From here, you can disconnect the user)

Fermeture des sessions ouvertes pour l'utilisateur : dupont

L'utilisateur dupont a 1 session(s) ouverte(s)

Êtes-vous certain de vouloir la fermer? Oui, Fermer

Connections list (you can define an observation period)

Analyse pour rexy

Dates du 2007-12-03 au 2008-05-11

#	logged in	session time	upload	download	server	termine cause	callerid
1	2007-12-26 14:11:02	17 minutes, 13 seconds	0.63 MBs	7.63 MBs	alcasar-duisi3	User-Request	00-0D-56-55-25-0F
2	2007-12-03 15:07:29	10 minutes, 31 seconds	497.71 KBs	2.93 MBs	alcasar-duisi2	User-Request	00-0D-56-D9-B5-9B
3	2007-12-03 13:55:30	23 minutes, 20 seconds	1.31 MBs	7.63 MBs	alcasar-duisi2	User-Request	00-0D-56-D9-B5-9B
Total pages		51 minutes, 4 seconds	2.41 MBs	18.21 MBs			

Utilisateur: rexy

début date: 2007-12-03

fin date: 2008-05-11

nbr. page: 10

classé le: plus récent en premier

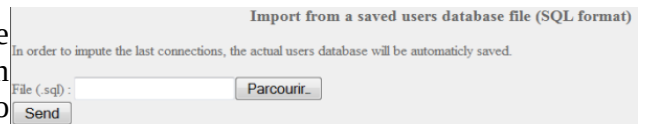
show

3.6. Importing users

In the ACC (menu « AUTHENTICATION », « Import ») :

a) From a user database backup

When you import a user database backup, the current database will be emptied. Because this database needs to be provided in case of inquiry, a backup is automatically done (see §7 to retrieve this backup).

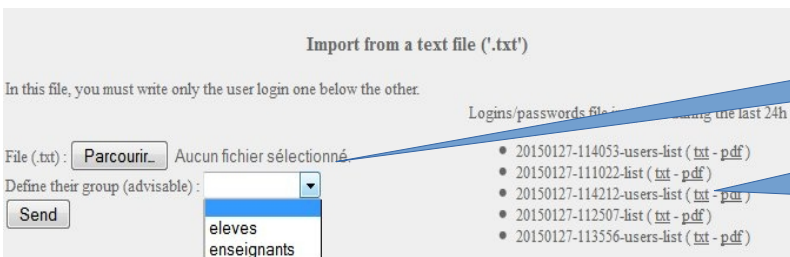


b) From a text file (.txt)

This function allows you to easily add users to the current database. This text file must be formatted like this : one user login per line followed (or not) by a password separated by a space. Without a defined password, ALCASAR creates one randomly. This file can come from a spreadsheet application :

- from the « Microsoft office suite », record the file in « Text (DOS) (*.txt) format » ;
- from the « LibreOffice office suite », record the file in « Text CSV (.csv) » format and remove separators (option « edit filter parameters »).

Once the file is imported, ALCASAR creates each new account. If the login name already exists, the password is just changed. Two files in « .txt » and « .pdf » format, including login names and passwords, are created and saved in the directory « /tmp » (during 24 hours). These files are available in the ACC.

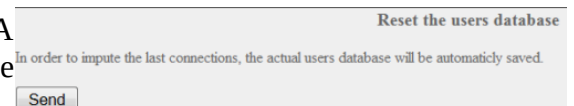


In order to ease the management of new users, you can define their group of ownership.

For each import, a file including logins and password is available during 24 hours (« txt » and « pdf » format).

3.7. Emptying the user database

This function allows you to delete all the users in one click. A backup of this database is automatically done. See §7 to retrieve the backup. See previous chapter to re-inject it.



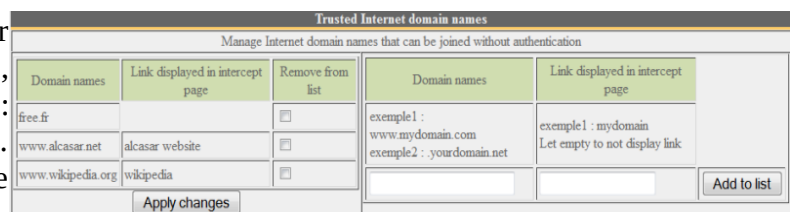
3.8. Authentication exceptions

By default, ALCASAR is configured to stop the network flow from a user not logged in. Nevertheless, you can define some exceptions :

- to allow auto update of antivirus and auto-update of operating systems (See §11.2) ; On « Windows© » : to keep the “Internet access” icon on, even if nobody is connected.
- to access a server or a security zone (DMZ) located behind ALCASAR ;
- to allow some devices to not be intercepted;
-

a) To trusted sites or trusted domain names

In this window, you can input trusted site names or trusted domain names. In case of a domain name, all the linked sites are allowed (example : « .free.fr » allows “ftp.free.fr”, “www.free.fr”, etc.). You can display a weblink to a trusted site on the ALCASAR homepage.



b) To trusted IP addresses or trusted network IP addresses

Trusted IP addresses		
Manage systems addresses or networks IP addresses that can be joined without authentication		
Trusted IP addresses	Comments	Remove from list
192.168.182.3	my_nas	<input type="checkbox"/>
Apply changes		
Trusted IP addresses	Comments	
exemple1 : 170.25.23.10	my_web_server	
exemple2 : 15.20.20.0/16	my_dmz	
		Add to list

In this window, you can manage trusted IP addresses or trusted network ip addresses (a DMZ for example). The network protocol filtering, if enabled (see § 4.2.c), has no effect on the addresses mentioned here.

c) Allowing trusted client devices

It is possible to allow some client devices to go through ALCASAR without being intercepted. In order to do that, create a user whose name is the MAC address of the device (example: 08-00-27-F3-DF-68) and the password is “password”. It should be borne in mind that in this case, traces of connection to the Internet will be charged to the device (not to the user). It must be done only if the Information Systems Security Manager has approved it.

To have more information on the MAC address, you can add user information in the “user info” menu (ie: first name).

#	Usager	Actions	Membre du groupe
1	00-11-09-2D-25-4C (PC proviseur)		
2	48-5B-39-4D-0D-77 (PC profs)		
3	fabien_y		elevés
4	jerome_m		elevés
5	laurent_t		elevés

3.9. Auto-registration via SMS

a) Purpose, principle and prerequisite :



The objective of this module is to provide to the users a self registration, while respecting the legal requirements. In order to work, this module required a GSM modem (also called 3g key), and a subscription to a mobile operator.

How does it work? The user who want an ALCASAR account in order to access to the Internet send a simple SMS to number of the ALCASAR 3g key. The SMS content is the password, and the phone number of the user is the login. When the SMS is received by ALCASAR, the account is created.

During our tests the following 3g key were used :

- **Huawei E180**

- ~ 30€
- Connectivity: USB
- Power : USB
- Little issue with the Huawei firmware.
- Configuration : **at19200**



- **Wavecom Fastrack suprem 10**

- ~ 60€
- Connectivity: RS-232 (with an RS-232/USB link)
- Power: Power mains
- No issues.
- Configuration : **at115200**



- **Wavecom Q2303A Module USB**

- ~ €
- Connectivity: USB
- Power: USB
- No issues.
- Configuration : **at9600**

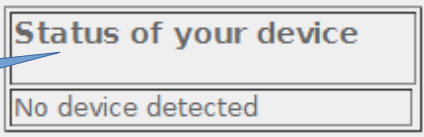


b) enable the service :

- ▼ **AUTHENTIFICATION**
- ▶ Créer un usager
- ▶ Éditer un usager
- ▶ Créer un groupe
- ▶ Éditer un groupe
- ▶ Importer / Vider
- ▶ Exceptions
- ▶ Activité
- ▶ Auto enregistrement (SMS)

You can have an access to the configuration of this module in the autoregistration entry.

If no 3g key are plugged, the configuration page is disabled.



If a valid 3g key is connected:

Status of your device
Your 3g key is connected | Connection : at115200 | Configuration : at | Valider

Service status	Signal strength	Device IMEI	Number of SMS received
<input checked="" type="checkbox"/> Gammu is down <input type="button" value="Start"/> <input type="button" value="Stop"/>	-	-	-

Configuration	Current configuration
Phone number (3g key) <input type="text"/> <input type="button" value="Edit"/>	XXXXXXXXXX ⁽¹⁾
PIN password <input type="text"/> <input type="button" value="Edit"/>	1234 ⁽²⁾
Time for a new session <input type="text"/> days <input type="button" value="Edit"/>	1 ⁽³⁾
Max number of try before a permanent ban <input type="text"/> <input type="button" value="Edit"/>	2 ⁽⁴⁾
Duration of a ban (for example, after X try) <input type="text"/> days <input type="button" value="Edit"/>	1 ⁽⁴⁾

Show 10 entries

Phone number	Reason	Expiration date	Action
No matching records found			

No matching records found | previous | next

⁽¹⁾ This number must be written as the international pattern: +xxYYYYYYYYYY. « xx » for country indicative. « YYYYYYYYYY » for the phone number (9 digits). This number will be write on the user information page (see next §).

⁽²⁾ Be careful, If the PIN code is wrong, the SIM card will be locked. In this case, follow the instructions in the documentation “alcasar-2.9-technique.odt - §8.2 Auto-inscription par SMS »” to unlock it.

⁽³⁾ This field give a value (in days) for a valid account.

⁽⁴⁾ A policy against the spam has been implanted :

- Number of tries allowed by phone when receiving an invalid password (just one word in the content of the SMS).
- If the number of try is exceed, the phone number of this user will be banned for a time (in days). Each phone number ban will be ignored by ALCASAR.

⁽⁵⁾ Each 3g key has a different baud rate transfer. See previous chapter to find the rate for the 3g keys we have tested. A bigger list of configuration can be find on : <http://wammu.eu/phones/>

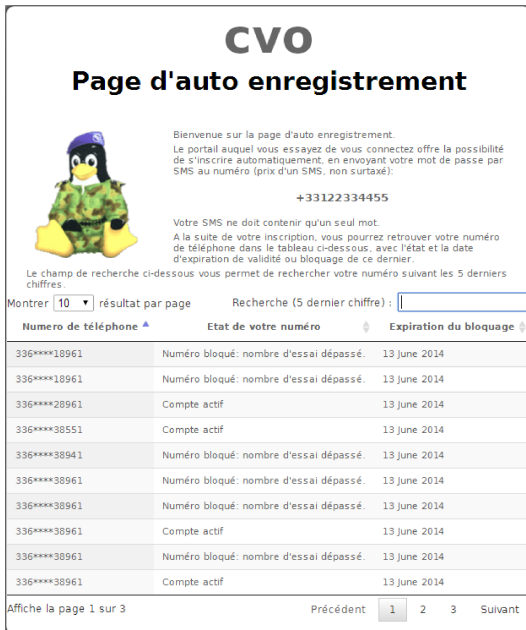
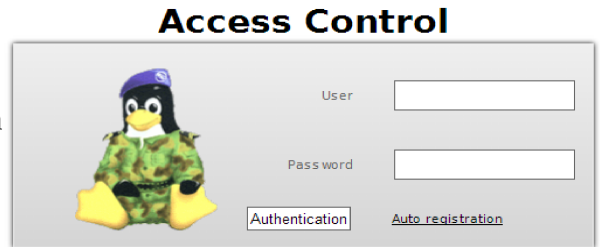
If all is set correctly, you can start the module with the “starts” button.

Service status	Signal strength	Device IMEI	Number of SMS received
<input checked="" type="checkbox"/> Gammu is running <input type="button" value="Start"/> <input type="button" value="Stop"/>	-- 60 %	353805013215525	0

This table show the status of the service, the signal strength, the IMEI number and the number of SMS received (reset when the service is stopped).

c) User interface

Once the service is started, the interception page provides an additional link « Auto registration ».



This link gives some information about the SMS account already created. Moreover, each user can have an information on the status of his phone number.

d) Accounts management [administration]

Each account created by the auto-registration module has just one attribute : the expiration date. These accounts belong to the users group “sms”. So, if you want to set an attribute, you can edit the “sms” user group (see §3.2). These accounts are not seen in the standard user management section of the ACC.

This table gives the state of phone numbers which have sent one or more SMS. If you click on delete, the account (if it is already available) will be deleted, and the user can create an account again.

Numéro	Raison	Date d'expiration	Action
336****	Un compte a été créé	13 June 2014	Effacer
336****	Un compte a été créé	13 June 2014	Effacer
336****	Le nombre d'essais maximum a été dépassé	13 June 2014	Effacer

e) Country filtering

By default, the SMS auto registration module allows only french numbers (country code: +33). A web interface is available to change the level of filtering:

- only french numbers
- only European numbers
- Allow every numbers
- Personal configuration: the administrator can authorize a personal list of country.



f) Error messages [administration]

Can not listen the ttyUSB0 port.	You 3g key is maybe used by an other program
Timeout. Can not connect to modem.	The 3g key has been disconnected
An issue with your Sim card was detected. Is it in the key?	The Sim card is not in the 3g key
Warning, during the last startup, the PIN code was wrong. The Sim card must be blocked. Please read the documentation.	The PIN password is invalid. The SIM card is maybe blocked. Please instructions in the technical documentation of ALCASAR (§8.2 - Auto-inscription par SMS »).

4. Filtering

- FILTERING** ALCASAR has several optional filters:
- ▶ **Blacklist**
 - a blacklist and a whitelist of domain names, URLs and IP addresses;
 - ▶ **Whitelist**
 - an anti-malwares on the WEB flow;
 - ▶ **Protocols**
 - a filter for network protocols.

The first filter was developed at the request of organization likely to welcome young people (schools, secondary schools, recreation centers, etc.). This filter can be compared to the parental/school control system. You can enable or disable it for each user (or group of users) by modifying users or groups attributes (see §3).

The anti-malware can detect a lot of type of files (virus, worm, phishing, etc.). It can be combined with previous filter. It is enabled by user. It is updated every 4 hours.



Domain names, URLs and IP addresses are referenced in two lists.

- Either you operate a whitelist. The filtered users using that list can access only the sites and IP addresses of the whitelist
- Either you operate a blacklist. The filtered users using that list can access all the sites and IP addresses except those of the blacklist.

On ALCASAR, this filter runs on all network protocols. For example, if the domain name “warez.com” is blocked, all protocols for this domain will be blocked (HTTP, HTTPS, FTP, etc.).

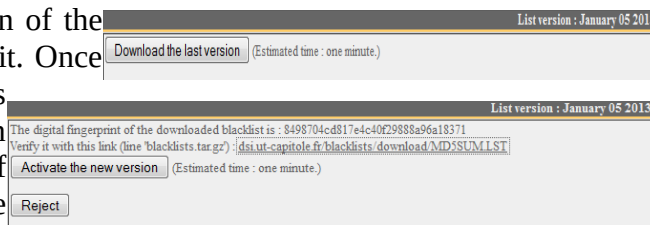
ALCASAR uses **the excellent** list (black + white) drawn up by the University of Toulouse (France). This list was chosen because it is distributed under a free license (creative commons) and its content refers to France. In that list, domain names (eg www.domaine.org), URLs (eg www.domaine.org/rubrique1/page2.html) and IP addresses (eg 67.251.111.10) are listed by categories (games, astrology, violence, sects, etc.). The ACC allows you :

- to update that list and to define the categories of sites to block or to allow;
- to rehabilitate a blocked site (exemple : a site that was banned, was closed and purchased by new people);
- to add sites, URLs or IP addresses that are not in the list (CERT alerts, local directive, etc.).

4.1. Blacklist and whitelist

a) Updating the list

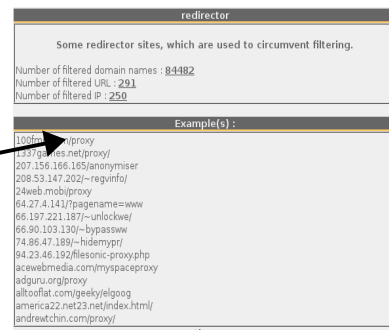
The update of the blacklist will download the latest version of the list of the University of Toulouse (France) and will install it. Once the file is downloaded, ALCASAR calculates and displays its fingerprint. Then, you can compare this fingerprint with the one available on the website of the university of Toulouse. If the two are identical, you can confirm the update. Otherwise, discard it.



b) Editing the blacklist

You can choose categories to filter and restore or add sites to the « blacklist ».

BlackList									
Domain names : 1248186, Url : 54296, Ip : 214557									
Select the categories to filter									
ariel	astrology	audio-video	blog	celebrity	chat	cooking	filehosting	financial	forums
games	lingerie	manga	mobile-phone	publicite	radio	reaaffected	shopping	social_networks	sports
webmail	adult	agressif	dangerous_material	dating	dequie	gambling	hacking	malware	marketingware
mixed_adult	phishing	redirector	remote_control	sect	strict_redirector	strong_redirector	tricheur	warez	



By clicking on the category name, you display its definition and the number of domain names, URLs and IP addresses it contains. By clicking on one of these number, you display the first 10 sites.

You can rehabilitate domain names or IP addresses.

You can add domain names or IP addresses directly in the ACC or by importing text file (one domain or one address per line).

Info: if you want to test site filtering or site restoring, remember to clear the cache memory of the browsers.

c) Special blacklist filtering

The blacklist has two special filters available for HTTP protocol. The first one blocks URLs containing an IP address instead of a domain name.

The second one exclude results from search engines that may not be suitable for minors ("Safe search" function). This second filter is compatible with "Google", "Yahoo", "bing" and "metacrawler". This second filter works only on HTTP requests.

It works with "YouTube" only if you get a Youtube ID. For that, visit : http://www.youtube.com/education_signup. Once your YouTube account is created, copy the ID in the ACC and save the changes.

Option A : ajouter une nouvelle règle d'en-tête HTTP
 Modifiez votre filtre de matériel ou vos paramètres de serveur proxy pour que tout le trafic sortant vers youtube.com contienne l'en-tête HTTP personnalisé suivant. L'ID à utiliser dans la configuration de l'en-tête HTTP, écrit ci-dessous, est propre au réseau de votre établissement scolaire. Si votre établissement est bloqué au niveau du quartier, cet en-tête HTTP sera propre au réseau du quartier.

Once your account is created, get your Youtube ID (character string just after the ':' character).

d) Whitelist



As for the blacklist, you can select categories and add your own domain names and IP addresses.

Note : "liste_bu" is a category used by french students (bu=bibliothèque universitaire=university library). This category contains a lot of useful websites validated by teachers and learning teams.

4.2. Protocol filtering

When this filter is not enabled, a logged in user can use any protocol (Internet access is limitless). All the actions of logged in users are traced and recorded regardless of the protocol used. When the filter module is enabled, only the HTTP protocol is enabled by default. All other protocols are blocked. It is possible from this restrictive mode, to enable, one by one, the network protocols you want to allow. A list of standard protocols is presented by default. You can enrich it.

Port number	protocol name	Authorized	Remove from list
-	icmp	<input type="checkbox"/>	<input type="checkbox"/>
22	ssh	<input type="checkbox"/>	<input type="checkbox"/>
25	smtp	<input type="checkbox"/>	<input type="checkbox"/>
110	pop	<input type="checkbox"/>	<input type="checkbox"/>
143	imap2	<input type="checkbox"/>	<input type="checkbox"/>
220	imap3	<input type="checkbox"/>	<input type="checkbox"/>
443	https	<input type="checkbox"/>	<input type="checkbox"/>
631	ipp	<input type="checkbox"/>	<input type="checkbox"/>
993	imaps	<input type="checkbox"/>	<input type="checkbox"/>
995	pop3s	<input type="checkbox"/>	<input type="checkbox"/>

- ICMP is used for example by the «ping» command.
- SSH (Secure SHell): to allow secure remote connections.
- SMTP (Simple Mail Transport Protocol) : to allow emails to be sent from a thick client (outlook, thunderbird, etc.).
- POP (Post Office Protocol) : to allow thick clients to download emails.
- HTTPS (HTTP secure) : to allow

secure web surfing.

Note: When enabled, this filter is active for all users. In future, ALCASAR will be able to associate it (or not) to each user (as for blacklist/whitelist/anti-malware).

5. Access to Statistics

STATISTICS

- ▶ [user/day](#)
- ▶ [connections](#)
- ▶ [daily use](#)
- ▶ [global traffic](#)
- ▶ [detailed traffic](#)
- ▶ [security](#)

Statistics are available on the ACC (menu "statistics"), after logging in.

This menu provides access to the following information:

- number of connections per user per day (updated every night at midnight);
- connection status of users (updated in real time);
- daily load of the portal (updated every night at midnight);
- global & detailed network traffic (updated every 5 minutes);
- security reports (updated in real time).

5.1. Number of connections per user per day

This page displays, per day per user, number, connection time and volumes of data exchanged.

Please note: the volume of data exchanged is what ALCASAR sent to the user (upload) and what it received from the user (download).

		User name	Number of connections	Cumulative time	Volume of data exchanged		
67		2007-06-04	chillspot.lyon.fr	3	34 minutes, 58 seconds	1.51 MBs	52.37 MBs
68		2007-06-04	chillspot.lyon.fr	3	17 minutes, 38 seconds	0.78 MBs	3.15 MBs
69		2007-06-04	chillspot.lyon.fr	3	32 minutes, 4 seconds	1.84 MBs	12.61 MBs
70		2007-05-30	chillspot.lyon.fr	4	3 hours, 50 minutes, 26 seconds	3.25 MBs	17.91 MBs
71		2007-06-01	chillspot.lyon.fr	4	57 minutes, 16 seconds	4.04 MBs	23.44 MBs
72		2007-05-31	chillspot.lyon.fr	4	1 hours, 20 minutes, 26 seconds	6.80 MBs	26.79 MBs
73		2007-05-30	chillspot.lyon.fr	4	50 minutes, 32 seconds	4.03 MBs	29.53 MBs
74		2007-05-30	chillspot.lyon.fr	4	32 minutes, 49 seconds	1.79 MBs	11.75 MBs
75		2007-06-05	chillspot.lyon.fr	5	21 minutes, 22 seconds	1.97 MBs	71.12 MBs
76		2007-05-31	chillspot.lyon.fr	5	1 hours, 12 minutes, 26 seconds	0.88 MBs	4.71 MBs
77		2007-06-01	chillspot.lyon.fr	5	1 hours, 3 minutes, 25 seconds	1.41 MBs	59.74 MBs
78		2007-05-30	chillspot.lyon.fr	6	25 minutes, 10 seconds	1.86 MBs	61.05 MBs
79		2007-06-04	chillspot.lyon.fr	6	1 hours, 11 minutes, 4 seconds	6.33 MBs	39.43 MBs
80		2007-06-05	chillspot.lyon.fr	7	33 minutes, 45 seconds	1.40 MBs	9.79 MBs
81		2007-05-31	chillspot.lyon.fr	8	1 hours, 2 seconds	0.83 MBs	32.22 MBs
82		2007-05-30	chillspot.lyon.fr	10	3 hours	17.60 MBs	39.65 MBs
83		2007-05-31	chillspot.lyon.fr	14	3 hours, 51 minutes, 40 seconds	2.63 MBs	15.65 MBs

start time: 2007-05-30 stop time: 2007-06-06 pagesize: 10 sort by: connections number order: ascending show

On Access Server: all User: []

One line per day

You can customize this state by:

- Filtering on a particular user;
- Defining a certain period of time;
- Sorting with different criteria.

5.2. Connection status of users

This page lists log-in and log-out events from the portal. An input box allows you to specify your search and display criteria.

With no search criteria, the chronological list of connections is displayed (since the installation of the portal).

Please note: the volume of data exchanged is what ALCASAR sent to the user (upload) or what it received from the user (download).

Afficher les attributs suivants :
 Accounting Stop Delay
 AcctAuthentic
 CalledStationId
 Caller Id
 Client IP Address

Classé par :
 Accounting Id

Nbr. Max. de résultats retournés :
 40

Envoyer

Critère de sélection :
 --Attribute--

Select your search criteria here. By default, no criteria is selected. The list of connections made since the installation of the portal will be displayed in chronological order. Two examples of search are detailed below.

Select your display criteria here. Criteria have been pre-defined. They meet most needs (user name, IP address, log-in, log-out, volume of exchanged data). Use <Ctrl> and <Shift> to change the selection.

- Example of search No1 : Display, in chronological order, of the connections established between June 1 and June 15, 2009 with the default display criteria:

Client IP Address	Download	Login Time	Logout Time	Session Time
192.168.182.10	443.61 KBs	2009-05-29 11:19:54	2009-05-29 11:32:34	12 minutes, 40 seconds
192.168.182.22	1.66 MBs	2009-06-03 18:24:20	2009-06-03 18:44:20	20 minutes
192.168.182.129	46.12 MBs	2009-06-03 18:58:23	2009-06-04 09:39:01	14 hours, 40 minutes, 38 seconds
192.168.182.10	381.81 KBs	2009-06-04 12:58:10	2009-06-04 13:06:08	7 minutes, 58 seconds
192.168.182.10	400.14 KBs	2009-06-04 13:41:29	2009-06-04 13:43:45	2 minutes, 16 seconds
192.168.182.10	327.07 KBs	2009-06-04 14:50:24	2009-06-04 15:22:37	32 minutes, 13 seconds
192.168.182.10	96.93 KBs	2009-06-04 15:23:13	2009-06-04 15:37:46	14 minutes, 33 seconds
192.168.182.10	286.75 KBs	2009-06-04 15:38:37	2009-06-04 16:20:42	42 minutes, 5 seconds
192.168.182.129	10.33 MBs	2009-06-04 16:29:46	2009-06-04 19:15:48	2 hours, 46 minutes, 2 seconds
192.168.182.110	303.42 KBs	2009-06-04 16:57:30	2009-06-04 18:25:17	1 hours, 27 minutes, 38 seconds

Afficher les attributs suivants :
 Accounting Stop Delay
 AcctAuthentic
 CalledStationId
 Caller Id
 Client IP Address

Classé par :
 Accounting Id

Nbr. Max. de résultats retournés :
 40

Envoyer

Critère de sélection :
 --Attribute--

Login Time >= 2009-06-01 del
 Login Time <= 2009-06-15 del

- Example of search No2 : Display of the 5 shortest connections during the month of July 2009 and with the IP address "192.168.182.129". The display criteria include the cause of disconnection but not the volume of data exchanged:

Client IP Address	Login Time	Logout Time	Session Time	Terminate Cause	User Name
192.168.182.147	2009-07-01 14:07:28	2009-07-01 14:08:30	1 minutes, 2 seconds	User-Request	
192.168.182.147	2009-07-21 10:57:19	2009-07-21 10:58:26	1 minutes, 7 seconds	Admin-Reset	
192.168.182.147	2009-07-01 16:21:43	2009-07-01 16:23:00	1 minutes, 17 seconds	User-Request	
192.168.182.147	2009-07-07 09:50:35	2009-07-07 09:54:02	3 minutes, 27 seconds	User-Request	
192.168.182.147	2009-07-01 17:50:50	2009-07-01 17:54:30	3 minutes, 40 seconds	User-Request	

Afficher les attributs suivants :

- Stop Connect Info
- Terminate Cause
- Unique Id
- Upload
- User Name

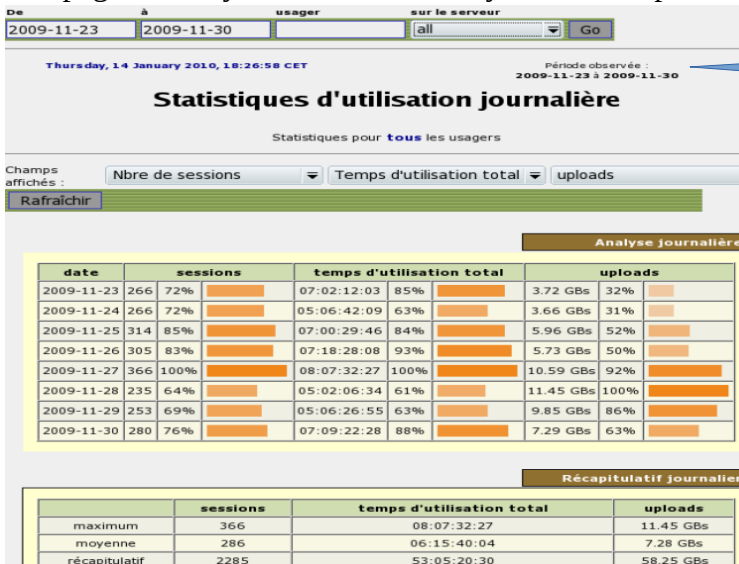
Classe par : Session Time

Nbr. Max. de résultats retournés : 5

Envoyer

5.3. Daily use

This page allows you to know the daily load of the portal.

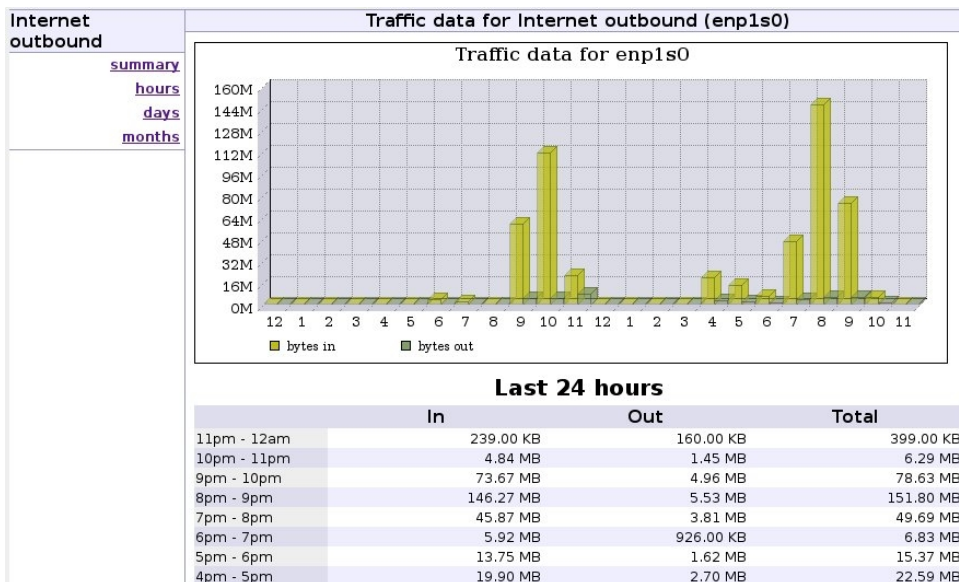


Here, set the period. You can specify a particular user (leave this field blank to accommodate all users).

5.4. Global and detailed traffic



Global traffic



This graph allows to show network statistics by hour, day, month.

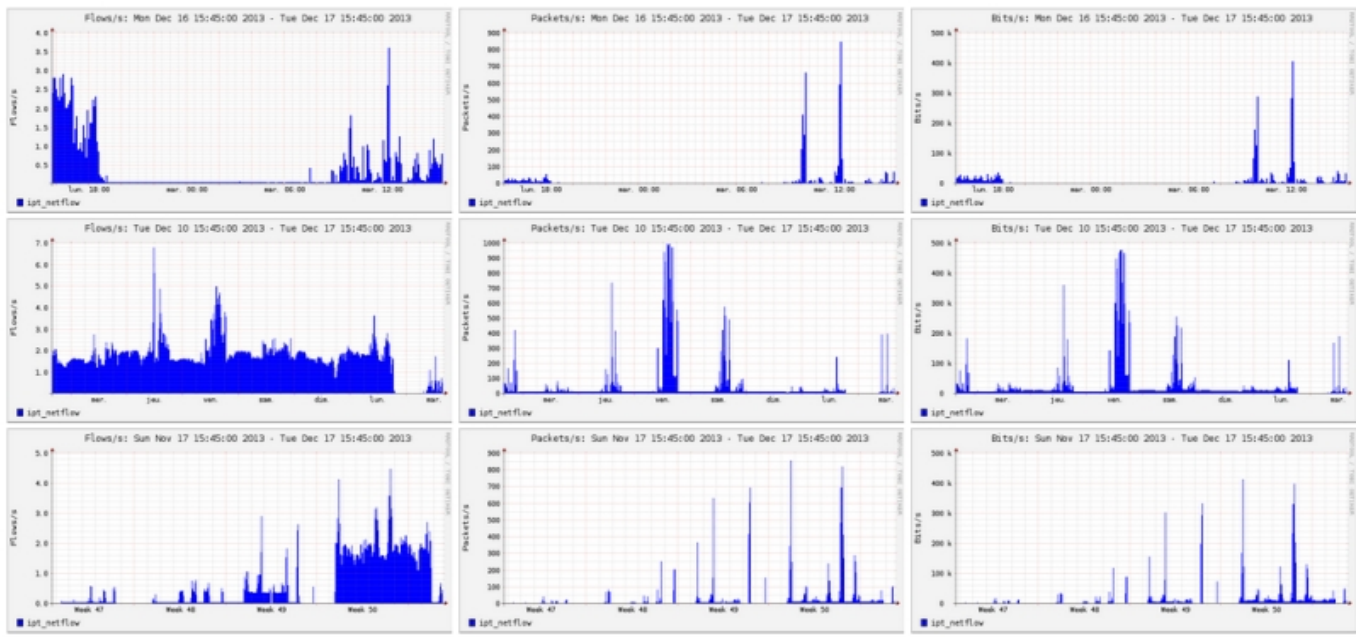
Detailed traffic



This page shows the statistics for outbound network traffic (by day, by week and by month). The data are updated every 5'.

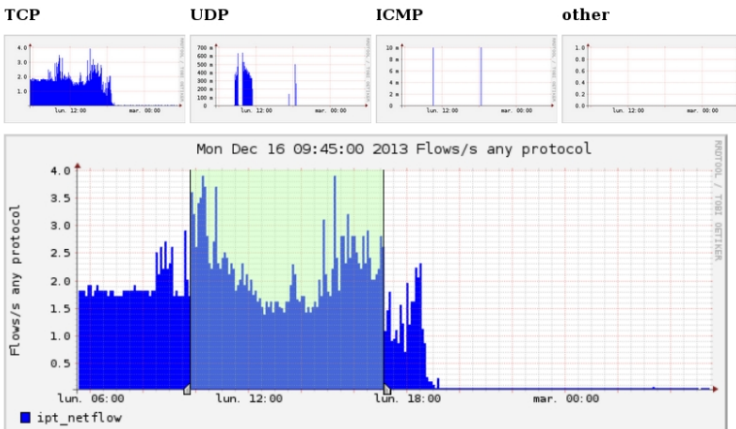
Home Graphs Details Alerts Stats Plugins live [Bookmark URL](#) Profile: live ▾

Overview Profile: live, Group: (nogroup)



The “details” menu allows you to zoom on a particular time slot. For the HTTP flows, network IP addresses are hidden and replaced with the IP address of ALCASAR.

Profile: live



Netflow Processing

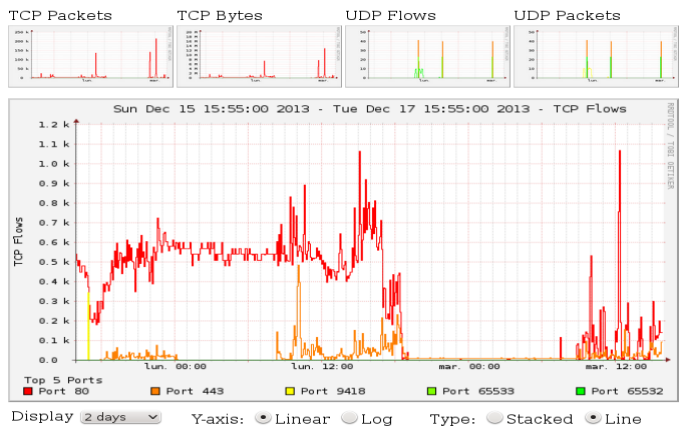
Source: ipt_netflow Filter: and <none> Options: List Flows Stat TopN
 Top: 10 Stat: DST Port order by bytes Limit: Packets > 0 Output: / IPv6 long

```
** nfdump -M /var/log/nfsen/profiles-data/live/ipt_netflow -T -R 2013-12-16/nfcpad.201312160945:2013
nfdump filter:
any
Top 10 Dst Port ordered by bytes:
Date First seen Duration Proto Dst Port Flows(%) Packets(%) Bytes(%)
2013-12-16 09:44:48.692 26689.479 any 80 50589(86.6) 730755(98.9) 61.3 M(99.2)
2013-12-16 09:44:54.617 26683.314 any 443 5180(8.9) 5217( 0.7) 322601( 0.5)
2013-12-16 09:56:00.115 5470.785 any 21592 150( 0.3) 106( 0.0) 12097( 0.0)
2013-12-16 18:04:18.241 4963.755 any 1938 12( 0.0) 106( 0.0) 8351( 0.0)
2013-12-16 09:50:43.685 281.302 any 27019 120( 0.2) 120( 0.0) 5120( 0.0)
2013-12-16 10:39:26.645 19.331 any 60225 1( 0.0) 40( 0.0) 3145( 0.0)
2013-12-16 09:50:42.985 2.051 any 27017 46( 0.1) 46( 0.0) 2944( 0.0)
2013-12-16 09:50:42.985 2.051 any 27018 46( 0.1) 46( 0.0) 2944( 0.0)
2013-12-16 09:45:35.640 22558.334 any 993 43( 0.1) 43( 0.0) 2729( 0.0)
2013-12-16 18:33:58.632 20569.346 any 21 31( 0.1) 33( 0.0) 1980( 0.0)

Summary: total flows: 58436, total bytes: 61.8 M, total packets: 739076, avg bps: 18520, avg pps: 27,
Time window: 2013-12-16 09:44:48 - 2013-12-16 17:09:38
Total flows processed: 58436, Blocks skipped: 0, Bytes read: 3049352
Sys: 0.024s flows/second: 2337014.1 Wait: 0.020s flows/second: 2851927.8
```

PortTracker

Port Tracker



The “plugins” menu shows the network traffic based on the traffic protocol (port tracker). You can see the protocols currently in use (“now”) or all protocols used during the last “24 hours”.

SURFmap is a plugin which gives the possibility to have a visual of all the flows (not only HTTP).

Different filters are available in the *Menu* : number of flow, begin and end date, show just the flows of one @ip (“src host 123.123.123”)

Do not enter a huge value of flow. More this value is high, more the time of process is high.


The *Auto-refresh* refresh this page each 5 minutes.



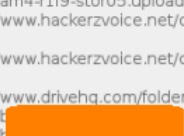
5.5. Security Report

This page displays three safety information identified by ALCASAR:

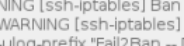
- The list of users disconnected due to a MAC address spoofing of their device;
- The list of malwares intercepted by the integrated antivirus;
- The list of IP addresses banned during 5' by the intrusion detection system. The reasons can be : 3 successive SSH connection failures – 5 successive connection failures on the ACC – 5 successive login failures for a user – 5 successive attempts to change password in less than one minute.

Adresse(s) MAC usurpée(s) (Watchdog)	
alcasar-watchdog : 172.16.0.10 is usurped (54-04-A6-1E-F7-DB). Alcasar disconnect the user (
alcasar-watchdog : 172.16.0.10 is usurped (54-04-A6-1E-F7-DB). Alcasar disconnect the user (
alcasar-watchdog : 172.16.0.10 is usurped (54-04-A6-1E-F7-DB). Alcasar disconnect the user (
alcasar-watchdog : 172.16.0.10 is usurped (54-04-A6-1E-F7-DB). Alcasar disconnect the user (
alcasar-watchdog : 172.16.0.10 is usurped (54-04-A6-1E-F7-DB). Alcasar disconnect the user (
alcasar-watchdog : 172.16.0.10 is usurped (54-04-A6-1E-F7-DB). Alcasar disconnect the user (
alcasar-watchdog : 172.16.0.10 is usurped (00-24-81-12-52-01). Alcasar disconnect the user (

User logged out due to MAC address spoofing

Virus bloqué(s) (HAVP)	
2013 Aug 30 18:16:55 127.0.0.1 GET 200 http://securite-informatique.info/Virus/eicar/download/eicar_niveau1.zip 276+474 VIRUS ClamAV: Eicar-Test-Signature	
2013 Oct 03 10:15:29 127.0.0.1 GET 200 http://am4-r1f9-stor05.uploaded.net/dl/efb34de0-af7b-4851-81d0-caa42ca4a2e4 299+5000632 VIRUS ClamAV: Backdoors/Valnet2009/Trojan.Netbus.KeyHook170	
2013 Oct 03 11:30:49 127.0.0.1 GET 200 http://www.hackerzvoice.net/ceh/CEHv6%20Module%2008%20Trojans%20and%20Backdoors/valnet2009/Trojan.Netbus.KeyHook170	
2013 Oct 03 11:31:39 127.0.0.1 GET 200 http://www.drivehq.com/folder/p7275651/1833479246.aspx 471+182652 VIRUS ClamAV: PHP.C99-5	
2013 Oct 07 16:07:52 127.0.0.1 GET 200 http://t[redacted]305+5001325 VIRUS ClamAV: PHP.Optix	

Malware blocked
- EICAR test files
- Trojans
- Virus

Adresse(s) IP bloquée(s) (Fail2Ban)	
2013-09-25 11:52:51,640 fail2ban.actions: WARNING [ssh-iptables] Ban 172.16.0.12	
--> 2013-09-25 12:02:52,370 fail2ban.actions: WARNING [ssh-iptables] Unban 172.16.0.12	
iptables -D fail2ban-SSH -s 172.16.0.12 -j ULOG --ulog-prefix "Fail2Ban -- DROP" returned 100	

IP address blocked by the IDS

6. Backup

6.1. Connection logs

The menu "Backup" from the ACC displays, in the first column, the list of traceability files containing the users activity logs. To save them on another media "right click" on the file name, then "save target as".

These files are automatically generated once a week in the directory « /var/Save/larchive/ ». Files older than one year are deleted.

Traceability log files	
archive-20140103-18h59.tar.gz	(1.82 Mo)
archive-20131216-05h35.tar.gz	(572.83 Ko)
archive-20131209-05h35.tar.gz	(604.04 Ko)
archive-20131202-05h35.tar.gz	(761.29 Ko)
archive-20131125-05h35.tar.gz	(931.33 Ko)
archive-20131118-05h35.tar.gz	(732.16 Ko)
archive-20131111-05h35.tar.gz	(1.36 Mo)
archive-20131104-05h35.tar.gz	(787.9 Ko)
archive-20131028-05h35.tar.gz	(848.86 Ko)
archive-20131021-05h35.tar.gz	(938.89 Ko)
archive-20131014-05h35.tar.gz	(643.25 Ko)
archive-20131007-05h35.tar.gz	(588.05 Ko)

In case of legal inquiry:

In a legal inquiry, law enforcement officials may ask for connection logs of your users. Give them the file of activity of the week of the offence.

If the officials ask for the files of the current week , create this file via the menu:

Create the active traceability file

6.2. The users database

The menu "Backup" from the ACC displays, in the second column, backup files (in "SQL" format) of the users database including : login, encrypted password, attributes and log in / log off sessions on the portal. They can be generated at any time in the directory « */var/Save/base/* » by clicking in the menu "Backup of the users database".

These files can be imported in ALCASAR (cf. §3.6.a). They are also used during the reinstallation of the portal (see §8.4).

Users database	
radius-20131216-04h45.sql	(365.28 Ko)
radius-20131209-04h45.sql	(347.22 Ko)
radius-20131202-04h45.sql	(327.67 Ko)
radius-20131125-04h45.sql	(309.69 Ko)
radius-20131118-04h45.sql	(290.98 Ko)
radius-20131111-04h45.sql	(268.58 Ko)
radius-20131104-04h45.sql	(250.18 Ko)

Save the active users database

7. Advanced features

7.1. Administration accounts management

ALCASAR server has two system accounts (or Linux accounts) that were created during the installation of the operating system:

- « root » : This is the account used for system administration ;
- « sysadmin » : This account allows you to take secure remote control of your system (see next §).

Along with these two "system" accounts, "management" accounts have been defined to control some functions through the graphical ALCASAR Control Center (ACC). These "management" accounts can belong to one of the three following profiles:

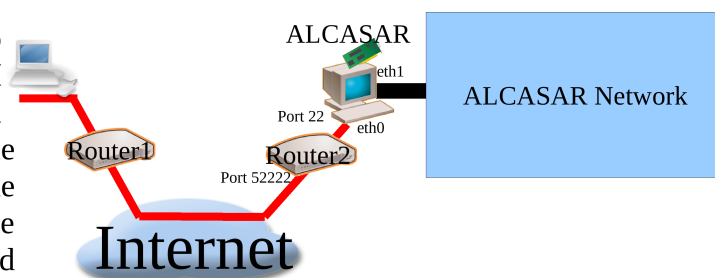
- « admin » : this account give access to all the functions of the ACC. A first "admin" account was created during the installation of ALCASAR (see Installation documentation);
- « manager » : this account only give access to users and groups management functions (see §3) ;
- « backup » : this account only give access to backup and archiving of log files (see previous chapter).

You can create as many management accounts as you want in each profile. To manage these management accounts, use the « *alcasar-profil.sh* » command as « root » :

- *alcasar-profil.sh --list* : to list all the accounts of each profile
- *alcasar-profil.sh --add* : to add an account to a profile
- *alcasar-profil.sh --del* : to delete an account
- *alcasar-profil.sh --pass* : to change the password of an existing account

7.2. Secure administration across the Internet

It is possible to establish a secure remote connection to an ALCASAR portal using encrypted data flow ("SSH protocol" - Secure SHell). Let's take an example of an administrator who seeks to administer, through the Internet, an ALCASAR portal or devices on the consultation network. Firstly, you need to enable the "SSH" service on ALCASAR (menu "system" and "network"). You must know the IP address of the "Broadband modem/router#2".



a) Broadband modem/router configuration

It is necessary to configure broadband modem/router#2 so that it doesn't block the "SSH" protocol. To anonymise the SSH data flow on the Internet, the default port (22) is replaced by another one (52222). If you want, you can still use the port 22.

Refer to your broadband modem/router documentation before performing this operation .

b) administration of ALCASAR in text mode

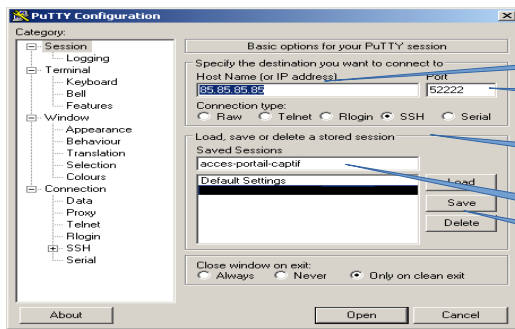
You can log in remotely to ALCASAR using the Linux "sysadmin" account created during the installation of the system. Once you are logged in, you can use the administration commands of ALCASAR (see § 12.1). Use the "su" command to become "root".

- On Linux, install "openssh-client" (you can also install

```
sysadmin@alcasar-rexy-74: /home/sysadmin
login as: sysadmin
Bienvenue sur alcasar-rexy-74
sysadmin@alcasar-rexy-74:~$
Last login: Sat Apr 3 15:21:56 2010 from 192.168.0.100
alcasar-rexy-74:~$
```

"putty") and run the command « `ssh -p 52222 sysadmin@w.x.y.z` » (replace « w.x.y.z » with the public IP address of the broadband modem/router#2 and replace the "external_port" with the listening port number of the broadband modem/router#2 (52222 in our example). You can add the "-C" option to enable the compression algorithm.

- On Windows, install "Putty" or "putty-portable" or "kitty" and create a new session:



Public IP address of the broadband modem/router#2

Listening port for the administration in ssh mode

Protocol

Session name

Save the session before finish

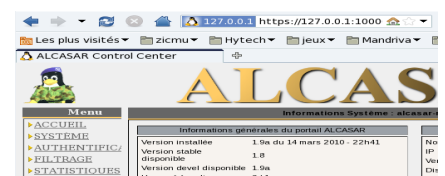
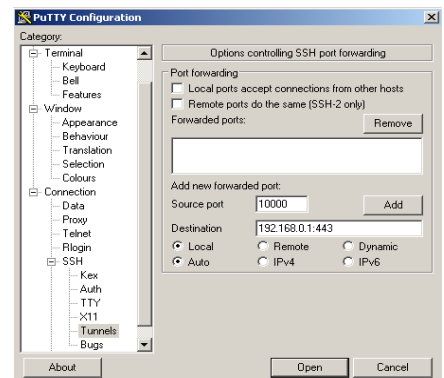
click on "Open", accept the server key and log in as "sysadmin".

c) Administration ALCASAR in GUI mode

The goal is now to redirect the data flow from the workstation's browser to ALCASAR in a SSH tunnel. To create this tunnel:

- On Linux, run the command: « `ssh -L 10000:@IP_eth1_alcasar:443 -p 52222 sysadmin@w.x.y.z` »
- On Window, configure « putty » as describe bellow:

- Load the previous session
- On the left side of the windows, select "Connection / SSH / Tunnels»
- In "Source Port" enter the port of entry of the local tunnel (greater than 1024 (here 10000))
- In "Destination", enter the IP address of eth1 of alcasar1 followed by the port 443 (here 192.168.0.1:443)
- Click on "Add"
- Select "Session" on the left side
- Click on "Save" to save your changes
- Click on "Open" to open the tunnel
- Enter the user name and password



Start your browser and go to : "https://localhost :10000/acc/"
 "acc/" in the end of URL is important!

d) Managing devices on the ALCASAR network

Following the same logic, it is possible to manage any device connected to the consultation network (WIFI access points, switches, LDAP / AD, etc.).

- On Linux, run the command: « `ssh -L 10000:@IP_equipment:Num_Port -p 52222 sysadmin@w.x.y.z` ».
 « @IP_quipment » is the IP address of the device to manage. « NUM_PORT » is the administration port of this equipment (22, 80, 443, etc.).
- On Windows, enter the IP address and the port of the device in the form "Destination" of "Putty".

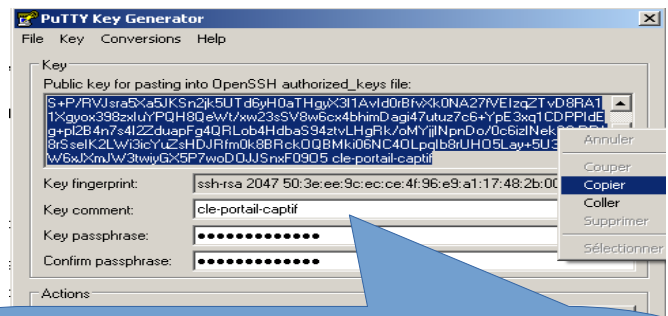
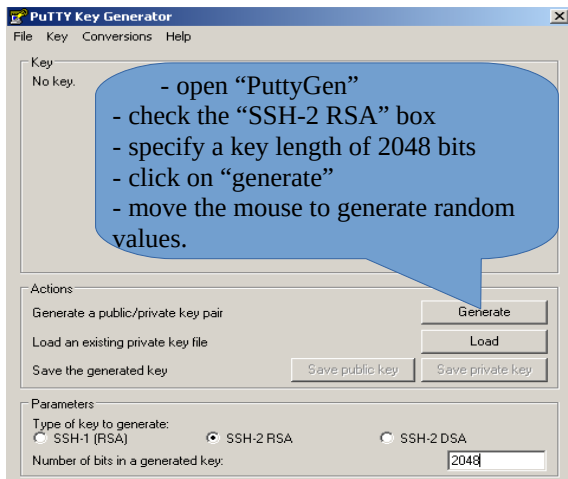
Run the command : « `ssh login@localhost:10000` » to use SSH for secure remote administration.

To connect the web-based interface, go to : « `http(s)://localhost :10000` ».

e) Use of SSH tunnel with public / private key pair (public/private key)

This paragraph, although not essential, adds an additional layer of security using private key authentication.

- generate a keys pair (public key / private key)
 - On Windows with « puttygen »



The keys are now created.

- Enter a representative comment in the "Key-comment" field;
- Enter and confirm the passphrase in the "Key passphrase" field;
- Save private key by clicking on "Save private key";
- Select and copy the public key (right click)

- Linux with « `ssh-keygen` »

In your personal directory, create the directory « `.ssh` » if it is not exist. From this one, generate your public/private key pair (« `ssh-keygen -t rsa -b 2048 -f id_rsa` »). The command « `cat id_rsa.pub` » displays your public key and allows you to copy it.

```
richard@rexy ~]$ mkdir .ssh
richard@rexy ~]$ cd .ssh/
richard@rexy .ssh]$ ssh-keygen -t rsa -b 2048 -f id_rsa
Generating public/private rsa key pair.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in id_rsa.
Your public key has been saved in id_rsa.pub.
```

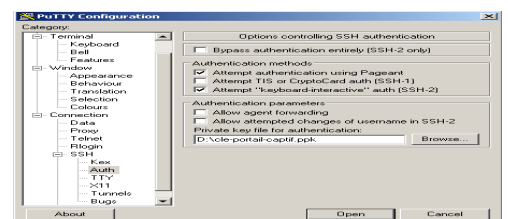
```
richard@rexy .ssh]$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEAyL4yM8B018Quusv1Iq/V
3kF2vwhuHzmNmH9ITFTALWHPHA9lWnx1cDPE9DPR7FPqrEZf/uT84C2G
o7d/IX+/JyPlVxUdXaZ9wj tusU3SVWSr6o9NXmbZqo0gzrGpjN7Vfu5
npCrDQ6fuq6PIm06AQCJQkySmOXDI6FVr4r5Zbw== richard@rexy
```

- Copy the public key on the remote portal:
 - run the following command to copy your public key directly on the remote server:
 - `ssh-copy-id -i .ssh/id_rsa.pub sysadmin@<@IP_interne_consultation>`
 - Enter your password; your public key is copied in the `sysadmin/.ssh/authorized_keys` automatically with the correct permissions.
 - Another method : log on through SSH to the remote ALASAR as "sysadmin" and execute the following commands : « `mkdir .ssh` » then « `cat > .ssh/authorized_keys` » ;
 - copy the contents of the public key from the clipboard ("Ctrl V" for Windows, middle mouse button for Linux) type « `Enter` » then « `Ctrl+D` » ; protect the directory : « `chmod 700 .ssh` » and key file « `chmod 600 .ssh/authorized_keys` » ; check the file : « `cat .ssh/authorized_keys` » and log out : « `exit` ».

- Connection test from Linux host : « `slogin sysadmin@w.x.y.z` »

- Connection test from Windows host :

- load the previous session of putty;
- on the left side, select "Connection / SSH / Auth";
- click on "browse" to select the key file;
- on the left side, select "Session";
- click on "Save" then on "Open";
- enter the user "sysadmin";
- the key is recognized, it remains only to enter the passphrase.



- If now you want to prevent the connection with passphrase, configure the sshd server:

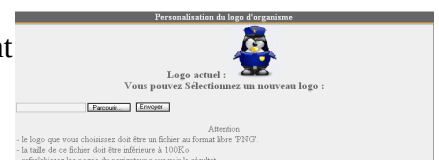
- become root (`su -`) and set the following options on the file « `/etc/ssh/sshd_config` » :
 - `ChallengeResponseAuthentication no`
 - `PasswordAuthentication no`
 - `UsePAM no`

- restart the sshd server (« `service sshd restart` ») and close the ssh session (« `exit` »).

```
richard@rexy ~]$ slogin sysadmin@
Bienvenue sur alcasar-rexy-74
Enter passphrase for key '/home/richard/.ssh/id_rsa':
Last login: Sat Apr 3 20:14:51 2010 from
alcasar-rexy-74:~$
```

7.3. How to display your logo ?

It is possible to display your logo by clicking on the logo on the upper right



corner of the ACC. Your logo will be inserted in the authentication page and at the top of the page of your management interface. Your logo must be in "png" format and its size must not exceed 100KB. Refresh the page to see the change.

7.4. Server certificate

Data is encrypted between ALCASAR and devices on the ALCASAR network in the following cases:

- for users : authentication request and changing passwords;
- for administrators : access to the ACC (ALCASAR Control Center).

Encryption uses TLS protocol with a server certificate and a local certificate authority (CA) created during the installation. This server certificate has a validity of four years. You can check it on homepage of the ACC :

Système	
Nom d'hôte canonique	alcasar
Date d'expiration du certificat	May 30 23:59:59 2012 GMT
Version du noyau	2.6.33.7-desktop586-2mnb (SMP)
Distribution	★ Mandriva Linux 2010.2
Uptime	51 minutes
Utilisateurs	1
Charge système	0 00 0 00 0 00 0%

If the server certificate is expired, you can regenerate it with the following command : « `alcasar-CA.sh` ».

It will be necessary to remove the old certificate from browsers before installing the new one.

a) Install an official certificate

In version 2.0 and higher, it is possible to install an official intranet certificate issues from a certificate authority (CA). The installation of such a certificate avoids security warning dialog box on browsers that did not install the ALCASAR root certificate (cf. §2.2.c). Unlike "Internet" certificates which certify a domain name registered at a registrar, an "intranet" certificate can certify a private IP address or a simple server name (hostname). This is the case of ALCASAR whose "hostname" is always "alcasar". To obtain your certificate, follow the instructions as noted on the site of the certificate authority. Please note that the web server used by ALCASAR is an "APACHE" server with a SSL module. The following example presents an "intranet" certificate installation generated by the certificate authority (CA) "Digitalix".

First, you will have to execute the following command on ALCASAR as "root" :



- `openssl req -newkey rsa:2048 -new -nodes -keyout alcasar.key -out alcasar.csr`
This command creates two files : the private key (`alcasar.key`) and the certificate signing request (`alcasar.csr`).
 - Copy the certificate signing request on a USB flash drive to copy its contents on the site of the certificate authority. The CA must provide you a file containing your official server certificate (`alcasar.crt`). If needed, you also have to download the intermediate authority certificate of your CA (for Digitalix, it is available here: <http://www.digitalix.fr/certs/HACert-bundle.crt>).
 - As "root", copy the three files « `alcasar.key` », `alcasar.crt` » and « `HACert-bundle.crt` » in your directory (`/root`). Then, execute the following commands :
1. `cd /etc/pki/tls` (moves in the certificate directory)
 2. `mv certs/alcasar.crt certs/alcasar.crt.old` then `mv certs/server-chain.crt certs/server-chain.crt.old` and finally `mv private/alcasar.key private/alcasar.key.old` (backup of the old certificates)
 3. `cp /root/alcasar.crt certs/` et `cp /root/alcasar.key private/` (copy of the official certificate and of its private key)
 4. if your CA owns a intermediate authority certificate: `cp /root/HACert-bundle.crt certs/server-chain.crt`
else : `cp certs/alcasar.crt certs/server-chain.crt`
 5. Restart the Apache web server with the command « `service httpd restart` ».

If you're having problems:

- either you reverse the instructions of the second line; or you regenerate new local certificates with the command : « `alcasar-CA.sh` » ;
- restart the Apache Web server with the command : « `service httpd restart` ».

b) Copy of a certificate on several ALCASAR server

If you use several ALCASAR server, it could be interesting to copy the server certificate from a reference ALCASAR server to other ALCASAR servers. If you installed an official certificate, execute the commands

from the points 1 to 5 from the previous section on the different ALCASAR servers. In the case of a certificate created during installation, copy the five following files from the reference ALCASAR to the other servers:

- for the certification authority : `/etc/pki/CA/alcasar-ca.crt` and `/etc/pki/CA/private/alcasar-ca.key`
- for the server certificate : `/etc/pki/tls/certs/alcasar.crt`, `/etc/pki/tls/certs/server-chain.crt` and `/etc/pki/tls/private/alcasar.key`

Restart the Apache Web server with the command : « `service httpd restart` ».

7.5. Use of an external directory server (LDAP or AD)

ALCASAR contains a module capable of requesting an external directory server (LDAP or AD) located either on the LAN side or on the WAN side.

When this module is enabled, ALCASAR uses the external directory to authenticate a user, but, if an error occurs, the local database will be used.

In all cases, user events logs are recorded in the local database of ALCASAR. Here is the management GUI of this module :

Remark :

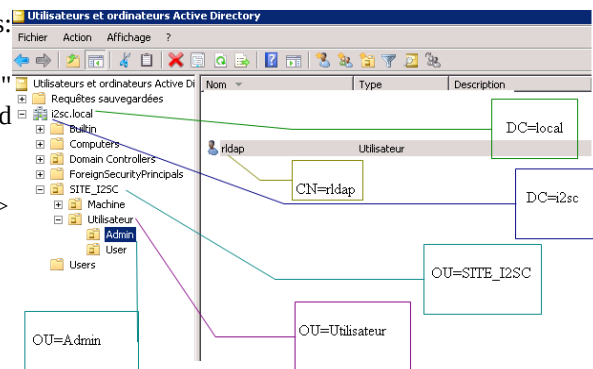
- attributes of users from the external directory can't be modified with the ACC;
- use of the secure protocol "ldaps" is not available for now. The network segment between ALCASAR and the directory server must be under control, for obvious reasons of security (cf. § 10);
- External directories do not support case sensitive unlike the local database of ALCASAR.

Example: This screenshot shows the AD directory tree organized as follows: standard users are put into the Organizational Unit (O.U.) "User".

The account used by ALCASAR to request the directory is the account "rldap" in the OU "Admin". This account is a standard account that does not need special rights.

Both O.U. "Admin" and "User" are located themselves in the OU "User".

- DN of the database : « `ou=User,ou=Utilisateur,ou=site_i2sc,dc=i2sc,dc=local` » --> research base of users, and this root is to be adapted to the organization of the directory tree.
- LDAP ID : « `sAMAccountName` » --> for AD; uid in general for other LDAP
- Filter : leave this field empty unless you want to select only specific users.
- LDAP user : « `cn=rldap,ou=Admin,ou=site_i2sc,dc=i2sc,dc=local` »
Please note that this field and the field "Password" can be left blank if the directory server accepts requests in anonymous mode.
- Password : password of the user « `rldap` »



From an external directory server (LDAP or AD) and in order to provide to users some attributes specific to ALCASAR (bandwidth, concurrent session, etc.), it is possible to create a group named "ldap" (respect lower case letters) for which you set the desired attributes.

It is also possible to assign attributes to a particular account authenticated on an external directory. To do this, create a user in the ACC with the same name / identifier as that is in the directory.

7.6. Integration in a complex architecture (AD, external DHCP, LDAP)

ALCASAR can be installed in an existing network with a Windows domain, a DHCP server and an external directory for the authentication process (LDAP or AD) (see previous §).

a) Managing Windows DNS

If your existing environment already has Active Directory enabled, then, Windows computers of your domain controller must request the DNS of this controller for specific resolutions of the domain and they must request ALCASAR for Internet access. One solution is to configure the ALCASAR DNS so it redirects to the domain controller the DNS queries concerning resolution of the domain. In this way, devices are configured with a unique DNS : ALCASAR.

On ALCASAR, the only change to make is to add the following line in the file `« /usr/local/etc/alcasar-dns-name »` :

```
'server=/<your.domain>/<@IP_SRV-AD-DNS>'
```

Example : “brock.net” domain is managed by the AD/DNS server “192.168.182.10”. The line to add is :
`“server=/brock.net/192.168.182.10”`

Please note that it is the domain name and not the name of the server “srv-ad.brock.net”.

Restart the service DNSMASQ to take your changes into account (`« service dnsmasq restart »`).

 **Reminder** : The DNS suffix 'localdomain' of static IP devices is mandatory.

So, computers (whether in static IP address mode or in DHCP mode) integrated into a Windows domain must have their primary DNS suffix configured with the Windows domain name and in addition with the suffix '.localdomain'.

b) Using an External DHCP Server

With an external DHCP server, ALCASAR must not assign network settings anymore, but this task must be carried out by the external DHCP server.

In order to do this, ALCASAR will act as a relay agent to enable assignment of IP addresses by the DHCP server.

It is necessary to stop the ALCASAR DHCP server (in the ACC: System/Network: No DHCP mode) and to modify the following variables to manage the external server (configuration file `« /usr/local/etc/alcasar.conf »`) :

- EXT_DHCP_IP=<@IP_srv_external>
- RELAY_DHCP_IP=<@IP_internal_ALCASAR>
- RELAY_DHCP_PORT=<relay port to the external DHCP server> : (default 67)

The external DHCP server must be configured to provide to devices:

- a range of IP @ corresponding to the range allowed by ALCASAR (default 192.168.182.3 to 254/24)
Warning: ALCASAR keep for itself the following address for its internal interface: 192.168.182.1 and 192.168.182.2.
- a gateway address corresponding to the internal IP address of ALCASAR (by default 192.168.182.1);
- the DNS suffix "localdomain";
- the IP address of the DNS server -> the internal IP address of ALCASAR (default 192.168.182.1);
- the IP address of the time server (NTP) -> the internal IP address of ALCASAR (default 192.168.182.1) or the domain controller (to avoid temporal drifts, synchronize the server clock with a trusted NTP server on the internet or with the ALCASAR server).

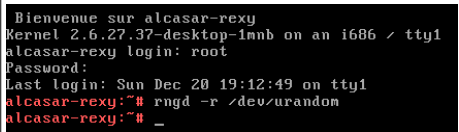
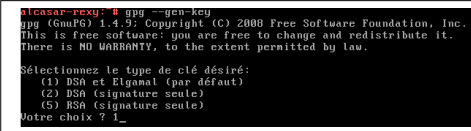

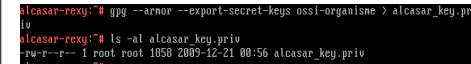
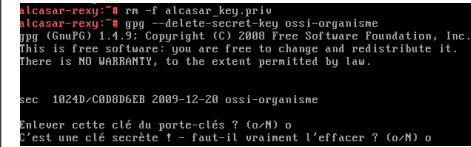
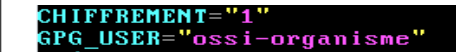
7.7. Encryption of log files

ALCASAR can automatically encrypt weekly log files (cd. §7.1). For this, it uses the GPG asymmetric algorithm (public key + private key).

By Providing the private key to an official of your company, you prevent administrators from being accused of log files modification.

In case of inquiry, simply provide log files and the private key for decryption.

The procedure for activating the encryption is as follows:

Printscreen	Comments	To do
	- Log on as « root ». - Start the entropy generator (random values).	<code>rngd -r /dev/urandom</code>
	- Generate the key pair (public key + private key). - Choose the algorithm, the size and the lifetime of the keys (no expiration). - Choose a user name and passphrase.	<code>gpg --gen-key</code> info: The user name must not contain spaces. This name is summarized in the term <username> later in this procedure.
	- Stop the entropy generator.	<code>killall rngd</code>
	- Export the private key. Copy this to an external media. - Provide it (with passphrase and username) to an official of your organization (Private key escrow).	<code>gpg --armor --export-secret-key \<username> > alcasar_key.priv</code> info : cf. installation doc for the USB management.
	- Delete the previously generated keys - Delete the private key from the GPG keyring	<code>rm -f alcasar_key.priv</code> <code>gpg --delete-secret-key <nom_utilisateur></code>
	- Enable encryption by changing the variables "CRYPT" and "gpg_user" in the file « /usr/local/bin/alcasar-archive.sh ».	<code>vi /usr/local/bin/alcasar-log-export.sh</code> info : assign the "username" to the variable « gpg_user »

Infos :

- ALCASAR uses the keyring "root" in the directory « /root/.gnupg » ;
- '`gpg --list-key`' : allows to list all the key pairs contained in this kit;
- '`gpg --delete-key <user_name>`' : deletes a public key keyring;
- '`gpg --delete-secret-key <user_name>`' : deletes a private key keyring;
- You can copy the directory « /root/.gnupg » on another server ALCASAR. Thus, you can use the same key and the same <username>;
- To decipher an encrypted archive: '`gpg --decrypt -files <filename_crypt_archive>`'.

7.8. Managing multiple Internet connections (load balancing)

ALCASAR has a script to distribute requests over a number of gateways to the Internet "`alcasar-load_balancing.sh start | stop | status`".

The parameters are not included in the ACC, it is necessary to modify the global configuration file "`alcasar.conf`" located under "`/usr/local/etc`".

Associated parameters (virtual networks card, weights, gateway ip address, etc.) must be defined in the following format: `WANx = "active [1 | 0], @ IPx / mask, GWx, Weight, MTUX"`.

The script creates the interfaces on the fly.

To make it active, the parameter "MULTIWAN" must include the "on" or "On" value; otherwise insert the "Off" value to enable the "single gateway" mode.

The connection test frequency is set by default to 30 sec.

Please note:

The parameter "FAILOVER=0" enables the MULTIWAN mode with no connection test to the gateways (no gateway failure detection).

7.9. Creating an ALCASAR dedicated PC

This chapter presents an example of a dedicated PC ALCASAR (appliance) whose constraints are : miniature (mini-itx), low noise, low cost and low energy consumption.

The configuration is the following :

- Case mini ITX (12V powerline);
- motherboard GigaByte GA-J1900N-D3V (two network cards and Intel 4-core Celeron);
- 4GB of DDR3 SODIMM memory;
- HDD 2.5' 200GB SATA.



SSD

Memory : 4GB of DDR3

The cost of this configuration is around 250 € (shipping included).

The consumption of this mini-PC is not more than 30W; the cost of the annual electricity consumption in France is about 30€ ($30 * 24 * 365/1000 * 0.1329$).

ALCASAR is installed via a USB drive as usual.

Once deployed, the unit requires no keyboard, no mouse and no screen.

7.10. Bypassing the portal

For reasons of maintenance or emergency, a portal by-pass procedure was created.

It disables user authentication and filtering.

Logging network activity remains active.

Network event logging remains active, but ALCASAR does not trace internet connections anymore.

- Bypass the portal by running the script « `alcasar-bypass.sh --on` ».
- To stop it, run the script « `alcasar-bypass.sh --off` ».

Please note:

Bypass mode is no longer active after restarting the server.

8. Shutdown, update and reinstallation

8.1. Shutdown

There are two possibilities to stop properly the ALCASAR portal:

- by briefly pressing the power button of the PC;
- by connecting to the console as root and running the command "init 0";

When restarting the portal ALCASAR a procedure deletes all connections that have not been closed due to an unplanned shutdown (failure, power failure, etc.).

8.2. Operating system update

Mageia-Linux provides an excellent mechanism to apply security patches on the system and its components. ALCASAR has been developed to be fully compatible with this mechanism. So, every night at 3:30, the security updates are downloaded, checked and applied. As root, you can manually update the system with the command « `urpmi -auto --auto-update` ».

Once the update is complete, a message may warn you that a system reboot is required. This message appears only if a new kernel or a major library were updated.

8.3. ALCASAR update

You can tell if an update is available for ALCASAR looking cover page of the ACC or by executing the following command « `alcasar-version.sh` ». Download and extract the archive of the latest version as it was the first installation of ALCASAR.

When starting the installation script (« `sh alcasar.sh --install` »), it detects the version and, if necessary, offers you the possibility to update ALCASAR to the latest version available.

During an update, the following settings will still remain:

- network configuration;
- the name and logo of the organization;
- logins and passwords for administrative accounts of the portal;
- users and groups database;
- main and secondary blacklists;
- trusted sites and MAC addresses list;
- network filtering configuration;
- the certificates of the Certification Authority (C.A.) and the server certificate.


8.4. Reinstalling ALCASAR

ALCASAR integrates a mechanism to reinstall portal with its settings. This is useful if you change the server (hardware update, hardware failure, etc.). Generate a portal configuration archive from the ACC (see §7.3). Copy the archive on a USB flash drive. Install the new operating system as you would for a first installation. Plug the USB flash drive and copy the file in the directory « `/tmp` ». Download and extract the archive of the latest of ALCASAR and install it as if it was “normal” installation: « `sh alcasar.sh --install` ».

9. Troubleshooting

If you have any problem with ALCASAR, this chapter sets out several troubleshooting steps that may indicate the cause. All commands (italic text on a yellow background) must be run in a console as « root ».

9.1. Network connectivity

- Check the network card status: run the commands « *ethtool eth0* » and « *ethtool eth1* » in order to check the status of both network cards (« *Link detected* » and « *Speed* » fields example) ;
- gateway/router connection test: Ping the broadband modem/router (Internet router). If an error occurs, check the cable connections, the eth0 settings (*ifconfig eth0*) and the status of the gateway/router;
- External DNS servers connection test: Ping the servers. If an error occurs, try with another server;
- Internal DNS server connection test (dnsmasq) : Send a name resolution request (ex. : *dig www.google.fr*). If an error occurs, check the configuration file of "dnsmasq" (*cat /etc/dnsmasq.conf*).
In order to check the proper operation of the service or the redirections (in case of an internal DNS server), uncomment the first line OPTIONS in the file */etc/sysconfig/dnsmasq* to display the requests and their responses (*tailf /var/log/dnsmasq/queries.log*). But be aware, this is very resource-intensive ! So don't forget to comment it again. Finally, to take changes into account, you need to restart the dnsmasq service : « *service dnsmasq restart* » ;
- Connection test to the Internet: run the command « *wget www.google.fr* ». In case of success the Google page is downloaded and saved locally (index.html). The result of this test is displayed in the menu "system / service" of the ACC;

- Device connection test : Run the command « *arping -I eth1 @ip_quipment* » to know if a device is connected to the ALCASAR network.
- To discover all the device, run the command « *arpscan eth1* » ;
00:1C:25:CB:BA:7B 192.168.182.1
00:11:25:B5:FC:41 192.168.182.25
00:15:77:A2:6D:E9 192.168.182.129
- You can display network packets from the ALCASAR network by installing « *tcpdump* » tool (*urpmi tcpdump*) and by running the command « *tcpdump -i eth1* ».

9.2. Available disk space

If the available disk space is not enough, some modules may not run properly anymore. You can check the available disk space (especially the */var* partition) :

- in GUI-mode via the homepage of the ACC;
- in text mode, using the command « *df* »

Point	Type	Partition	Utilisation	Libre	Occupé	Taille
/	ext3	/dev/sda1	55% (1%)	383.34 Mo	547.34 Mo	980.49 Mo
/tmp	ext3	/dev/sda5	3% (1%)	1.03 Go	33.77 Mo	1.12 Go
/home	ext3	/dev/sda7	3% (1%)	1.07 Go	33.46 Mo	1.10 Go
/var	ext3	/dev/sda8	0%	62.74 Go	251.01 Mo	66.35 Go
Total:			11%	65.21 Go	865.59 Mo	69.53 Go

In case of excessive reduction of this space, delete old log files after they have been archived (directory */var/Save/**).

9.3. ALCASAR server services

In order to complete these tasks, ALCASAR uses several server services. If one of them stops, ALCASAR would stop running too. So, it's useful to know why and how a service stopped. Run the command « *ps fax* » and check that the web server Apache ("httpd") is still running. If not, launch it with the command « *service httpd start* ». If an error occurs, display the log file with the command « *tailf /var/log/httpd/error.log* ».

The status of the others services is displayed in the ACC (menu « system/services ») :

Status	Nom du services	Actions
✓	radiusd	--- Arrêter Redémarrer
✓	chilli	--- Arrêter Redémarrer
✓	dansguardian	--- Arrêter Redémarrer
✓	mysqld	--- Arrêter Redémarrer
✓	squid	--- Arrêter Redémarrer

You can stop or restart them through the ACC or with the command "service service_name start / stop / restart". If an error occurs, check, in the system log file (*tailf /var/log/messages*) the reason why it does not work.

9.4. Client devices connection

In the ACC (menu "System / Activity"), make sure that all your

#	adresse IP	adresse MAC	usager	Action
1	192.168.182.130	00-0B-6C-3A-55-4D	██████	Déconnecter
2	192.168.182.22	00-1A-A0-2F-10-DB	██████	Déconnecter
3	192.168.182.15	00-15-58-E7-24-BA	██████	Supprimer
4	192.168.182.10	00-15-58-E7-5B-22	██████	Déconnecter

clients' network settings are correct (MAC address / IP address). If not, delete the old settings set by ALCASAR and save the new correct settings..

On the client devices :

- check the network settings: run « `ipconfig /all` » on Windows, « `/sbin/ifconfig` » on Linux ;
- if they are not correct, update them. For devices that use dynamic IP addresses, send again a DHCP request : « `ipconfig /renew` » on Windows, « `dhclient eth0` » on Linux.

If the interface is not configured, check the cable connections and make sure that DHCP frames of your client pass on the network (use the network analyser "Wireshark" for example). On ALCASAR, you can see incoming DHCP requests by running the command « `tailf /var/log/messages` » or by displaying the terminal 12 (<Alt> + F12).

```
Dec 29 22:31:27 alcasar coova-chilli[2299]: chilli.c: 2694: New DHCP request from MAC=08-00-27-E7-EA-89
Dec 29 22:31:27 alcasar coova-chilli[2299]: chilli.c: 2661: Client MAC=08-00-27-E7-EA-89 assigned IP 192.168.182.129
```

- Connection test to the portal : Send a ping request to the IP address of ALCASAR. If an error occurs, check the cable connections and the network settings.
- Name resolution test : On Windows, run « `nslookup alcasar` ». On Linux, run « `dig alcasar` ». The result should be the IP @ ALCASAR. In case of failure, If not, check that ALCASAR is the DNS server of the client.
- The ACC: On a client, with a browser try to connect to ALCASAR (<http://alcasar>).
- Internet Connection test : Try to visit a site on Internet. ALCASAR must "intercept" your request and display the login window.

9.5. Connection to ALCASAR with a serial terminal

It can be useful to use a keyboardless and screenless server. Below, the tutorial explains how to connect to a serial terminal (thank you [Igor Popowski](#)) :

File `/etc/inittab` :

- save the original : `cp /etc/inittab /etc/inittab.save`
- edit the file : `vi /etc/inittab`
before this line : « # Single user mode », add the following lines:
`#connexion au terminal serial`
`s0:2345:respawn:/sbin/agetty -L 9600 ttyS0 vt100 -f`
`/etc/issue`
then save « Esc » then « :wq! »

File `/etc/securityty` :

- save the original : `cp /etc/securityty /etc/securityty.save`
- edit the file : `vi /etc/securityty`
add one of the two following line at the end of file:
`ttyS0` if using a 9-pin serial port
`ttyUSB0` if using a Serial / USB
and save « Echap » and « :wq! »
- run the command « `init q` » to account for this change.

To display the output of the boot in GRUB, edit the file `/boot/grub/menu.lst`

- save the original: `cp /boot/grub/menu.lst /boot/grub/menu.lst.save`
- in the section 'title linux' after adding `vga=791` to end of line :
`console=tty0 console=ttyS0,9600n8` by standard serial port
`console=tty0 console=ttyUSB0,9600n8` in USB port

Connect your management station to ALCASAR with a null modem cable on the serial port COM1 (or through a serial/usb adaptator).

Configure « PuTTY » to use this COM1 serial connection in vt100 mode.

9.6. Problems experienced

This chapter presents feedbacks of organizations who have faced problems and have solved them.

a) On some sites, pictures are not displayed

When the domain names and URLs filtering is enabled, by default, ALCASAR filters links without domain name (links containing IP addresses). Thus, pages containing this kind of links are partially displayed.

To prevent from this problem, two solutions : uncheck the « IP » box from the blacklist (cf. § 5.1.c) or save the IP addresses contained in these links as "Domain names rehabilitated" (cf. § 5.1.c).

For example, the site "leboncoin.fr" hosts its pictures on the following IP addresses : 193.164.196.30, .40, .50 and .60 and 193.164.197.30, .40 and .50.

b) Navigation impossible with some antivirus

Disable the « proxy-web » function integrated in some antivirus. In Trend-Micro antivirus, for example, this function relies on a whitelist/blacklist downloaded from the servers of Trend Micro (backup30.trendmicro.com, etc.) that analyses/validates each request of a website... A limited rights user can enable it.

To avoid all inconvenience of this function incompatible with ALCASAR, it is better to stop the service « Proxy Trend service » and to restart the computer.

c) Windows Stations previously connected to a public hotspot

When a system connects to a "public hotspot", it provides network parameters and a lease time which determines the validity time of these parameters. Windows XP stations do not reset these settings during a reboot.

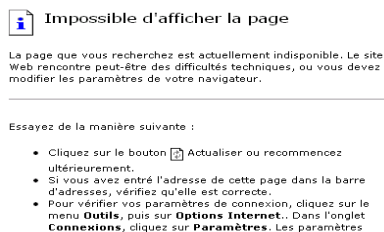
Thus, even if they change of wifi network, they will try to connect with the parameters of the previous hotspot. This problem is recognized by Microsoft that offers the following solution: Manually force the refreshing of the ip address with the command « *ipconfig /renew* ».

d) Windows clients with static addressing

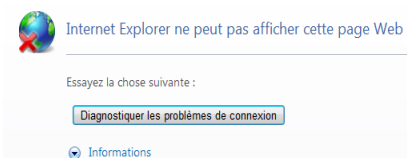
It is necessary to add the DNS suffix « localdomain » (Network configuration / Advanced / DNS).

e) No Internet browsing but the browser accesses the homepage of ALCASAR (<http://alcasar>)

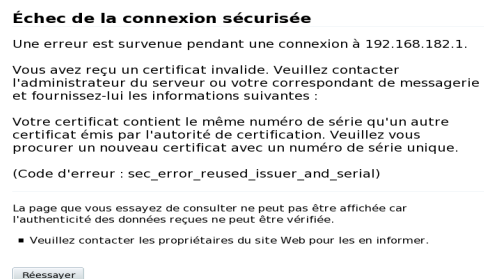
This can occur after a complete reinstallation of the portal or after an update with a change of the server certificate. Browsers display the following pages when they attempt to access a website:



With IE6



With IE 7 - 8 and 9



With Mozilla

This is because browsers try to authenticate the ALCASAR portal using an old certificate. The old certificate must be deleted on the clients' browsers (« Tools » / « Internet options » / tab « content » / button « Certificates » / tab « Root certification Authority ») to be replaced by the new one as described in chapter §2.2.c.

f) No Internet browsing but the « Trusted sites » section is filled in

ALCASAR verifies the validity of domain names entered in this section (cf. § 4.7.a). If a domain name is not valid, the 'chilli' service can no longer start. Then, change the invalid domain name and restart the 'chilli' service with the command « `service chilli restart` ».

g) Operating system and memory overload

The Linux system always attempts to use the maximum amount of memory (RAM) available. On the homepage of the ACC, the bar graph indicating the use of the memory can be regularly beyond 80 percent and can turn red. This is normal. If the system needs more memory, it will use the swap. This swap is an area of the hard disk used when your computer runs out of RAM but this “memory” is approximately 1000 times slower. If you notice that the system uses swap space (> 1%), you can consider increasing the RAM to significantly improve system responsiveness especially when the domain names and URLs filtering is enabled. You can display the system load on the home page of the ACC in 'System /Lload system', or in a console with the commands « `top` » ou « `uptime` » :

- 3 values shown represent the average system load average for the last hour, the five last hours and the last 15 minutes. The average load is the number of processes waiting for CPU usage. These values are normally less than 1.
- A value greater than '1 .00' results from an under-sized server (especially if it affects the three values (long-term overload).
- Search the process which represents a high proportion of the load (command « `top` »).

10. Security

On the consultation network, ALCASAR is the Internet Access Controller. It also helps to protect the network from external threats or from internal threats. To this end, it includes:

- protection credentials theft. The authentication flow between devices and ALCASAR users are encrypted. Passwords are stored encrypted in the database;
- protection against forgetting to log out. The attribute "time limit of one session" (cf. § 4.1) allows to automatically disconnect a user after a pre-set time;
- protection against failures (network or user devices). Devices that do not respond during 6 minutes are automatically disconnected;
- protection against session hijacking by spoofing network settings. This spoofing technique exploits the weaknesses of "Ethernet" and WIFI protocols. To reduce this risk, ALCASAR incorporates an auto-protection process which is running every 3 minutes (`alcasar-watchdog.sh`) ;
- protection of the bootloader (GRUB) of the portal with a password. This password is stored in the file « `/root/ALCASAR-passwords.txt` ».

The mere presence of ALCASAR not guarantee an absolute security against all threats, including internal threat (hacker on the ALCASAR network). In most cases, this threat remains very low. Without being paranoid and if you really need a high security, the following measures can improve the overall security of your system.

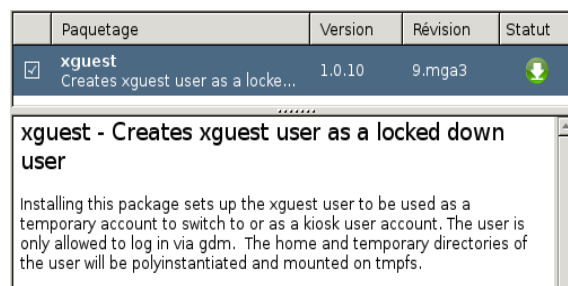
10.1. On ALCASAR

- Choose a strong "root" password (you can change it by running the command « `passwd` ») ;
- Protect your "ALCASAR" server and ISP's equipment to prevent unauthorized access, theft or installation of equipment between the modem and ALCASAR (locked premises, padlocks, etc.).
- configure the BIOS so that only the internal hard disk drive is bootable.
- Set a password to access the BIOS setup.

10.2. On the network

a) Network type "hotspot"

If you want to set up free access computers, it may be interesting



to install products ensuring both the protection of the privacy and security of these computers (like “cybercafe” computers). These products allow the user to be compartmentalised in a sealed environment. At the end of his session, the user environment is totally cleaned.

- On Linux, you can install the product "xguest" (it is provided natively with Mageia, Mandriva, Fedora, RedHat and Centos distributions)
- On Windows, you can choose one of these not free projects : “Openkiosk”, “DeepFreeze”, “Smartshield” and “reboot restore RX”. They save all the computer and restore it after a reboot. Microsoft gave the software “Steady state” for XP/Vista. This software is no longer supported.

On WIFI Access Points (AP) :

- Enable the “client isolation” option (also called wireless isolation). It prevents a user connected to an access point to communicate with another one connected to the same access point. They can only connect to Internet via ALCASAR.
- enable WPA2-Personal encryption (also known as WPA2-PSK). It avoids user to listen WIFI traffic (even if the key is the same for everyone). You can choose a simple WPA2 key as your organization name for example.



On switches of wired Ethernet networks :

- enable "DHCP snooping" on ALCASAR port and on interswitch ports. This will prevent false (fake) DHCP servers.

b) Controlled networks

On these networks, the stations must be protected by physical measures to ensure their integrity. Physical access to network consultation must be secured by the following:

- disconnect unused network jacks;
- on WIFI hotspots:
 - camouflage the network name (SSID)
 - enable encryption WPA2 "personal" with a strong key;
- on Ethernet switches:
 - Enable the "lock port" ("Port Security" function) to associate the MAC addresses of devices to the physical ports of switches;
 - select the "DHCP snooping" function on the port used by ALCASAR and on the interswitch ports. This will prevent false DHCP servers (Fake DHCP servers).

Devices can (should) incorporate several security features such as locking the BIOS setup, locking the desktop configuration, antivirus, automatic update security patches (patch), etc.. To facilitate downloading of security patches or antivirus updates (cf. § 4.7), ALCASAR can authorize devices to automatically connect without authentication on sites specifically identified.



your users aware of these two security features:

- Password must be changed
- **Credentials must remain confidential (Each user is responsible of "friend's session" using his credentials).**

11. Annexes

11.1. Useful commands and files

The administration of ALCASAR can be done from a command line interface (as 'root'). All these commands (shell scripts) begin with "alcasar-..." and are located in the directories « /usr/local/bin/ » and « /usr/local/sbin/ ». Some of them rely on the central configuration file of ALCASAR (« /usr/local/etc/alcasar.conf »). The "-h" argument lists available command line arguments.

- alcasar-bl.sh {-on/-off} : enables / disables the domain nd URL filtering;
 - {-download} : download and apply the latest version of the BlackList (BL);
 - {-adapt} : adapt the BL to the ALCASAR architecture ;
 - {-reload} : activate the freshly downloaded BL.
- alcasar-bypass.sh {-on/-off} : Enables/disables the « BYPASS » mode;
- alcasar-CA.sh : creates a local CA and server certificate. Requires the restarting of Apache web server (*service httpd restart*) ;
- alcasar-conf {-apply} : apply the network settings according to the configuration file;
- alcasar-dg-pureip.sh {-on/-off} : enables / disables the filtering of URLs containing IP addresses (instead of a domain name);
- alcasar-havp.sh {-on/-off} : enables / disables the antivirus filtering on WEB flows;
 - {-update} : updates the antivirus database (clamav) ;
- alcasar-https.sh {-on|-off} : enables / disables encrypted authentication flows;
- alcasar-load-balancing.sh : Aggregates several Internet connections. IP addresses, bandwidth and MTU of available modems/routers must be configured in the file */usr/local/etc/alcasar.conf* to work properly. Remember, the script is automatically launched when the system starts up only if the MULTIWAN parameter is set up in the file */usr/local/etc/alcasar.conf*. To ensure the script is running properly, execute the command : *ip route*. ("start", "stop" and "status" are the options available for this command).
- alcasar-logout.sh {username} : logs off user <username> from all his sessions;
 - {all} : logs off all the logged users;
- alcasar-mysql.sh {-import fichier_sql.sql} : imports a user database (overwriting the existing one)
 - {-raz} : resets the user database;
 - {-dump} : creates an archive file of the current user database in « /var/Save/base » ;
 - {-acct_stop} : stops the open accountability sessions;
- alcasar-nf.sh {-on/-off} : enables / disables the filtering of network protocols;
- alcasar-rpm-download.sh : Downloads and creates an archive file of all the necessary packets to install ALCASAR.
- alcasar-safesearch.sh {-on/-off} : enables / disables SafeSearch filter from the major search engines (blocks inappropriate or explicit content for young people);
- alcasar-version.sh : compares the current ALCASAR version with the latest one available on the Internet;

Each service provided by the server is supported by a "daemon", which is managed automatically start:

- View the status of a particular daemon (works for most daemons)
/etc/init.d/<nom du service> status
- Restart / stop a daemon:
/etc/init.d/<nom du service> {start|stop|restart|reload}

Info : a super daemon checks every 10 minutes service status ("*alcasar-daemon.sh*").

If you need to edit a file, you'll probably need to know some basic features of the text editor "vi". To help you you can consult a summary of useful commands: <http://www.computerhope.com/unix/uvi.htm>.

Sauvegarder un fichier - quitter vi	
:w	sauvegarde le fichier (penser à write)
:wq	sauvegarde le fichier et quitte vi (write and quit) équivalent à :x
:q	quitte vi sans sauvegarder les modifications (quit)
:q!	quitte immédiatement, sans rien faire d'autre
:w <nom_de_fichier>	sauvegarde le fichier sous le nom <nom_de_fichier>
:w	sauvegarde le fichier (penser à write)
:wq	sauvegarde le fichier et quitte vi (write and quit) équivalent à :x
:q	quitte vi sans sauvegarder les modifications (quit)
:q!	quitte immédiatement, sans rien faire d'autre
:w <nom_de_fichier>	sauvegarde le fichier sous le nom <nom_de_fichier>

Copier-Coller	
Y	copie une ligne, donc la place dans un tampon, pour pouvoir ensuite la coller (yank, tirer)
nY	copie n lignes
P	colle les lignes après le curseur (paste, coller)
Annuler ou répéter des modifications	
u	annule la dernière modification (undo, défaire)
.	(un point) répète les dernières modifications

Insérer du texte	
i	active le mode insertion
Supprimer du texte	
x	supprime un caractère (« faire une croix dessus »)
dd	supprime une ligne
ndd	supprime n lignes

Rechercher et remplacer	
/motif	recherche motif en allant vers la fin du document
n	répète la dernière recherche (next, suivant)
N	retourne au résultat de la précédente recherche effectuée
:%s/motif/motif2/g	recherche le motif et le remplace par motif2

11.2. Helpful authentication exceptions

The following values allow network devices to access WEB sites without authentication process in order to connect to the following services:

- The following values allow client devices to access the Internet without authentication in order to connect to the following services:
- perform a test of Internet connection,
- Microsoft system update,
- “TrendMicro” and “Clamav” antivirus update,
- check Mozilla version and its modules,
- ...

Sites, IP addresses or URLs can be configured in the ACC or in the following file “*/usr/local/etc/alcasar-uamallowed*”:

```
uamallowed="activation.sls.microsoft.com"  
uamallowed="www.msftncsi.com"  
uamallowed="crl.microsoft.com"  
uamallowed="download.microsoft.com"  
uamallowed="download.windowsupdate.com"  
uamallowed="go.microsoft.com"  
uamallowed="ntservicepack.microsoft.com"  
uamallowed="stats.update.microsoft.com"  
uamallowed="update.microsoft.com"  
uamallowed="update.microsoft.com.nsatc.net"  
uamallowed="pccreg.trendmicro.de"  
uamallowed="pmac.trendmicro.com"  
uamallowed="tis16-emea-p.activeupdate.trendmicro.com"  
uamallowed="update.nai.com"  
uamallowed="download.mozilla.org"
```

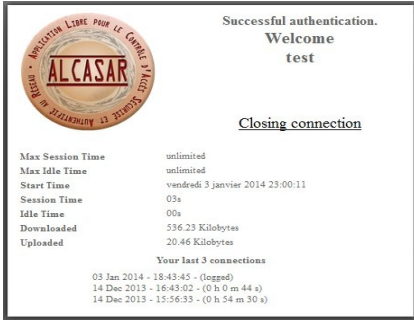
Domains can also be configured in the ACC or in the file “*/usr/local/etc/alcasar-uamdomain*”:

```
uamdomain=".download.microsoft.com"  
uamdomain=".download.windowsupdate.com"  
uamdomain=".ds.download.windowsupdate.com"  
uamdomain=".microsoft.com"  
uamdomain=".update.microsoft.com"  
uamdomain=".update.microsoft.com.nsatc.net"  
uamdomain=".windowsupdate.com"  
uamdomain=".windowsupdate.microsoft.com"  
uamdomain=".trendmicro.com"  
uamdomain=".activeupdate.trendmicro.com"  
uamdomain=".akamaiedge.net"  
uamdomain=".akamaitechnologies.com"  
uamdomain=".clamav.net"
```

It is necessary to restart the “chili” service if these files are changed directly.

11.3. User sheet

ALCASAR is now deployed in your organization. ALCASAR is a network access controller, it means that when you will go on the Internet, the following login window will be displayed. (Both fields are case sensitive; "smith" and "Smith" are two different users).



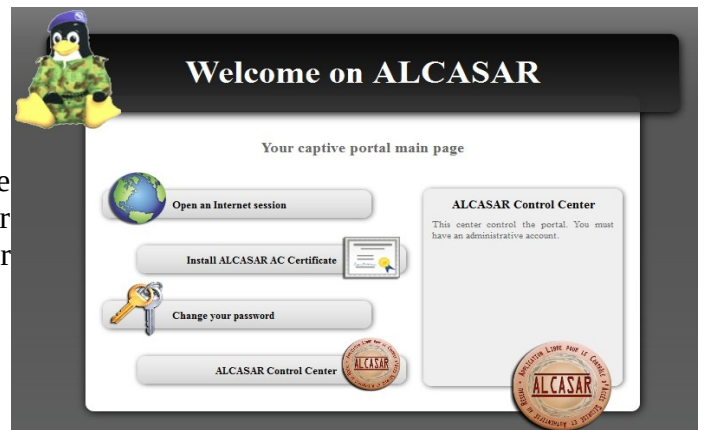
When login is successful, this popup window appears. It allows you to logout from ALCASAR. This window provides information on your account permissions (lease time, download limits, connection history, etc)..

If this window is closed when you want to logout, just type "logout" in your browser address bar.



If login fails, a message will give you more information: Expired account, maximum download volume reached, attempts to login outside the allocated slot times, etc.

You can access your account details(login/logout, change your password, installation of the certificate in your browser) by entering "ALCASAR" in your browser address bar.



The portal embeds a WEB flow antimalware and a website filtering to prevent unauthorized web browsing. It also helps to know if there is a problem with the Internet connection (hardware failure or ISP network failure). The following pages are displayed:

