



CHARON Linux Toolkit - Users Guide



Contents

Purpose of this document	3
Introduction	4
Setup	7
Menu options	10
Install/Upgrade/Remove CHARON	14
Network Configuration Utility	20
License key display/email	21
Request for New or Update license (send C2V file)	23
Install or Update (apply V2C file)	24
Check for license expiration	27
Service management (Start, Stop, Manage automatic boot & shutdown)	29
Service management - Update guests list	33
Service management - Start/stop guests	42
Service management - View guest log file	49
Service management - View guest manager log file	52
Service management - Install or update service	54
Service management - Create/Edit guest stop script	57
Service management - Connect to guest console	63
Service management - Edit configuration files	64
Service management - Manage monitored guests logs	65
Connect to guest console	66
Edit configuration files	70
Manage monitored guests logs	72
Send configuration and log files via mail	74
Manage recursive jobs: license expiration check, log events (cron)	76
Alerts management	78
Show host information (OS, HW, Charon version, utils and services)	84
Documentation	85
Technical part	86
Tips and Tricks	92
Alert emails examples	98
Quick Setup Guide	103

Purpose of this document

This document is the user's guide of the "CHARON Linux Toolkit" scripts.

These scripts are designed to:

- **Manage start/stop guests at server boot with services and customized shutdown commands:**
 - Automatic start of the guests (virtual machines) at Linux server boot
 - Clean shutdown of the guests at CHARON server shutdown
 - Clean shutdown of one guest at will using customized shutdown scripts (using 'ssh', 'expect' or any customized tool)
- **Monitor the CHARON guests log file**
 - Alert on removal of the license dongle
 - Send alerts for all INFO, WARN and ERROR messages found (depending on the error level setting)
- **Alert on license approaching termination**
 - Number of days before expiration alert is sent can be customized
- **Provide menu driven options** like:
 - Start/stop guests (virtual machines)
 - Connection to guests console
 - Display license contents, gather license content and update (send C2V and apply V2C files)
 - Send configuration and log files by email
 - Edit configuration files
 - Gather CHARON server information: Hardware, Operating System, Storage, Network interfaces, CHARON version, Utilities version

Introduction

Table of contents

- Table of contents
- Important note
- Kit download
- Prerequisites
- Conventions
- Note related to display/edit options
- Note related to emails

Important note



This document applies to Linux Utilities kit version 41 minimum dated August 2015.

Kit download

To download the kit, you must issue a request via email to the Stromasys support team support@stromasys.com

Prerequisites

- Basic knowledge of Unix commands
- Basic knowledge of CHARON products
- CHARON qualified versions:

	CHARON-AXP V4.4 Build 147-07
	CHARON-AXP V4.5 Build 155-05 minimum
	CHARON-AXP V4.6 Build 166-03 minimum
	CHARON-VAX V4.6 Build 165-02 minimum

- Scripts have been tested and validated on the following Linux distributions/versions:

	Fedora 20
	Red Hat Enterprise Linux Server release 6.2 to 6.6
	Red Hat Enterprise Linux Server release 7 and 7.1


- The following packages have to be installed on the CHARON server:
 - `telnet` (mandatory for console connection)
 - `expect` (recommended if `ssh` cannot be used to execute shutdown commands from the console)
 - `ssh` (recommended for executing shutdown commands with trusted connection between the CHARON server and the CHARON virtual machine)
 - `evince` (recommended for reading online documentation)
 - `sendmail` (mandatory)
 - `screen` (mandatory)

- `firefox`

- All described operations will have to be performed on the CHARON server and logged in as '**root**' (no other user supported).
 ⚠ **The 'menu' must be used by one user at a time only**
- CHARON-AXP and CHARON-VAX installations are supported when installed in `/opt/charon` folder only
- Mail service must have been configured.

Conventions

Throughout the document(s) these conventions are followed:

Notation	Description
\$	The dollar sign in interactive examples indicates an operating system prompt for VMS. The dollar sign can also indicate non superuser prompt for UNIX / Linux.
#	The number sign represents the superuser prompt for UNIX / Linux.
>	The right angle bracket in interactive examples indicates an operating system prompt for Windows command (cmd.exe).
User input	Bold monospace type in interactive examples indicates typed user input.
<path>	Bold monospace type enclosed by angle brackets indicates command parameters and parameter values.
Output	Monospace type in interactive examples, indicates command response output.
[]	In syntax definitions, brackets indicate items that are optional.
...	In syntax definitions, a horizontal ellipsis indicates that the preceding item can be repeated one or more times.
<i>disk0</i>	Italic monospace type, in interactive examples, indicates typed context dependent user input.
	This symbol represents the Enter key without typed user input. Used, for example, to tell the user to select the default value by pressing enter.

The following definitions apply:

Term	Description
Host	The system on which the emulator runs, also called the CHARON server
Guest	The emulated system, in which the Tru64 or OpenVMS system runs

Note related to display/edit options

Some menu options will allow you to display or edit files using available editors (if installed) between:


Editor	Interface	Description
gedit	Graphical	Windows notepad like
emacs	Graphical	Windows notepad like, advanced
nano	Text	Basic text editor
vi	Text	Advanced users
vim	Text	Advanced users with more features (colored)


Select the one you prefer or refer to 'man pages' for more information on available ones.

Note related to emails

There are 2 kinds of emails:

- **Results:** some menu options will allow you to send results via email (example: license display, log and configuration files). The recipient will then be unique
- **Alerts:** by default, the alert script will send alerts via email and 'wall' notifications. A recipient list can be defined in this case
 - Wall notification can be disabled from the menu
 - The alert script can be customized and then you can use command lines linked to your monitoring software and disable emails for example

 Do not use Stromasys email address to send results directly, for example to support@stromasys.com. The sender will be unknown to us, it is then recommended to send results to yourself first and to forward us the mail you received.

 Both require 'sendmail' to be installed and configured.

Setup

Table of contents

- Installation
- Upgrade

Installation

The tools are provided in a tar file that must be extracted into the `/opt/charon/utils` folder.

- If the folder does not exist, by default created at CHARON installation, create it and copy the tar file in this directory. In the example below, we assume the tar file was downloaded in the `/charon` folder and kit number is 41:

```
# mkdir -p /opt/charon/utils
# cp /charon/charon_linux_toolkit.kit41.tar /opt/charon/utils
```

- Extract the files from the tar file to the CHARON installation directory, subdirectory 'utils'

```
# cd /opt/charon/utils
# tar -xf charon_linux_toolkit.kit41.tar .
```

- In order to activate the 'menu' command, execute the following command:

```
# ./menusetup
```

- The setup will check first your terminal settings
 - if set to `VT100` you will not be able to continue until you set the `TERM` value to `VT200`, `dtterm` or `xterm` (see how to here: [Configuration](#))
- Mandatory packages installation will be checked (`telnet`, `screen`, etc.): if one package is missing you will not be able to continue.
- If `telnet` is installed, you will be prompted to force the mode to character to avoid some input issues while connected to the guests console
- Recommended packages installation will be checked (`expect`, `evince`, etc.): if one package is missing you will be able to continue, installation of these packages can be done later if needed
- The 'menu' alias will be created, this will be the command you'll use to access the menu
- Recursive jobs will be added in the `crontab` file:
 - if the `crontab` file does not exist, it will be automatically filled
 - if it already exists, you will be prompted to update it via the selected editor: a check will be performed and the missing entries will be added
- Alerts parameters will now have to be filled
 - Select between HTML or pure TEXT emails
 - Mail recipients list (used for alerts, not for sending files like log and configuration files for example)
 - Customize emails footer: you can add here your disclaimer, information on CHARON server or any information you think useful
 - Enable/disable wall alert messages
 - Install or update the alert script (can be customized later)
 - Select the alert level from guests log files: 0 = none, 1 = informational+warning+error entries, 2 = warning+error entries, 3 = error entries only

Example:

```

STROMASYS - Virtualization Technologies V1.1
Alerts management

No  Parameter                               Current value(s)
---  -
1 - Mail mode (text/html)                   HTML
2 - Mail recipients list                    jane@stromasys.com
                                           john@stromasys.com
3 - Create/Update alert mail footer         STROMASYS Bruno's VM - Linux Toolkit SOU
4 - 'wall' alert messages                  Disabled
5 - Update/reinstall alert script           Installed (from example)
6 - Select guests log alert level           WARNING + ERROR
7 - View alerts history (374 alerts)        Last update: Tue 18-Aug-2015 12:23:21
8 - Lic. expiration alerts from guests     Disabled

Enter your choice ('q' to quit): █

```

- When the setup is completed either log out to activate the 'menu' alias or execute the following command:

```
# . /etc/profile.d/charon_menu*
```

The Interface Configuration Files (`ifcfg`) will have to be created/updated manually before starting a guest using the related network cards. See the CHARON products related documentation, Installation part and Network configuration chapter. Please note the NIC name and the corresponding "`ifcfg-xxx`" name file will have to be identical to run with the Toolkit, see [How to customize network interfaces on Linux](#)

Upgrade

To upgrade the kit, you will need:

- to read the [DRAFT - CHARON Linux Toolkit - Release notes for kit 41](#) document
- Copy and extract the files from the tar file to the CHARON installation directory, subdirectory 'utils'

```
# cd /opt/charon/utils
# tar -xf charon_linux_toolkit.kit<newkit>.tar .
```

- You can then run the 'menu' command as usual

In case of upgrade from a kit older than 41 on a Fedora or Red Hat 7 system, you must first stop all services, including the virtual machines running, and remove the services that were defined using the previous method as described below:


1. List installed services

```
# chkconfig --list | grep charon
charon_gstart    0:off    1:off    2:off    3:on     4:on     5:on     6:off
charon_logchk   0:off    1:off    2:off    3:on     4:on     5:on     6:off
```

2. Remove installed services

```
# chkconfig --del charon_gstart
# chkconfig --del charon_logchk
```

Once these services are removed, you can perform a standard kit upgrade

 Services will have to be redefined or updated from the 'menu', they will then use the 'systemd' features

Menu options

Table of Contents

- Menu launcher
- Configuration
- Menu Options

Menu launcher

Execute:

```
# menu
```

Display:

```
STROMASYS - Virtualization Technologies Kit#41
CHARON Linux Toolkit

CHARON installation
 1 - Install/Upgrade/Remove CHARON
 2 - Network Configuration Utility
License management
 3 - License key display/email
 4 - Request for New or Update license (send C2V file)
 5 - Install or Update (apply V2C file)
 6 - Check for license expiration
Virtual Machines (guests)
 7 - Service management (Start, Stop, Manage automatic boot & shutdown)
 8 - Connect to guest console
 9 - Edit configuration files
10 - Manage monitored guests logs
11 - Send configuration and log files via mail
Miscellaneous
12 - Manage recursive jobs: license expiration check, log events, etc... (cron)
13 - Alerts management
14 + Show host information (OS, HW, CHARON version, utils and services)
15 + Documentation

Enter your choice ('q' to quit): █
```

Configuration

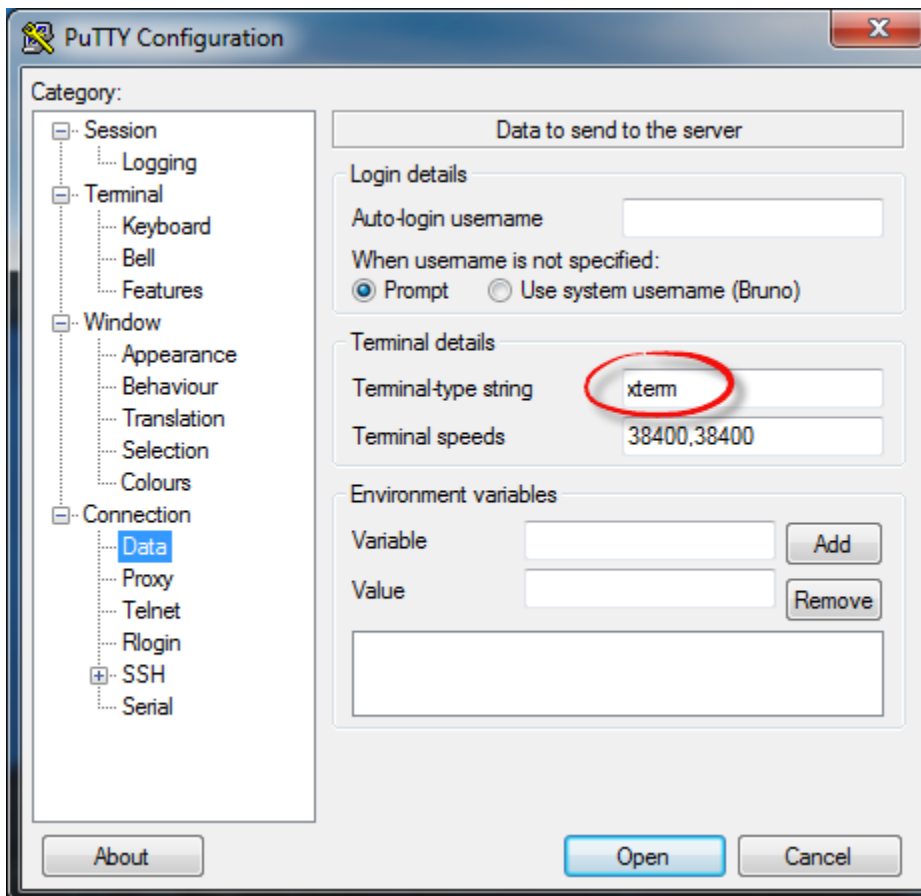
If the menu does not correctly display line drawing, change the terminal settings. If set to vt100 for example, you will see lowercase characters in place of menu borders.

To correct this, enter the following commands:

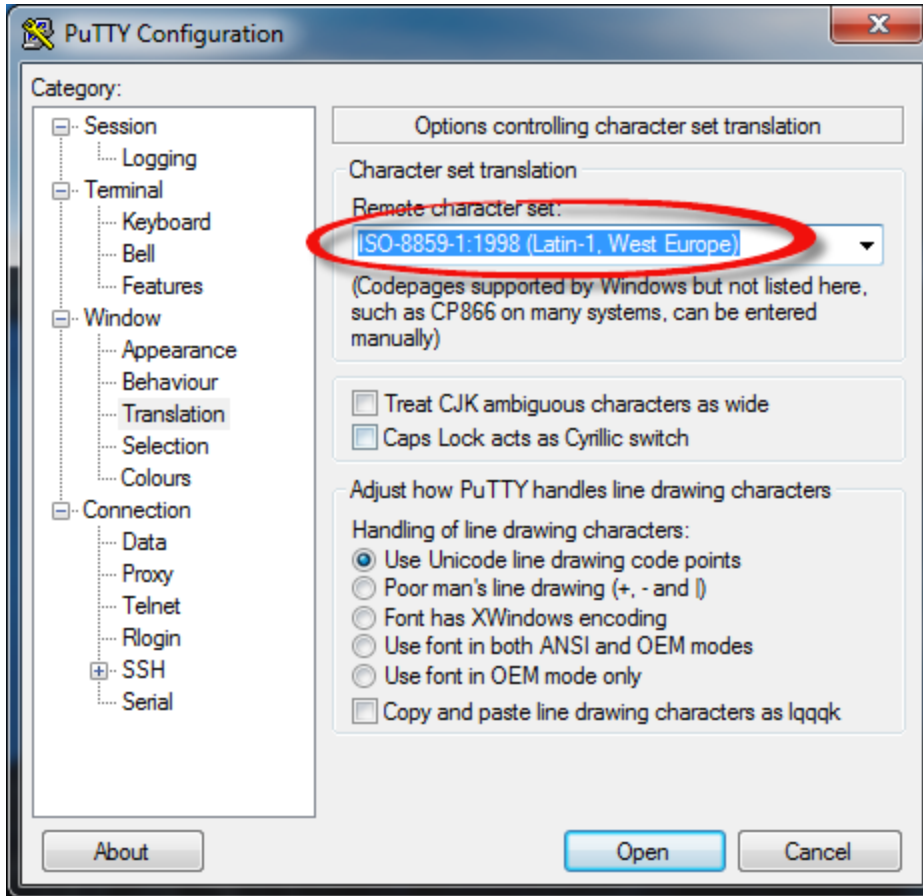
```
# echo $TERM
vt100
# TERM=vt200
# export TERM
# menu
```

Notes:

- New TERM value can also be set to `xterm`
- If you're using putty, you'll maybe have to force the **Terminal-type string**:



and maybe **Remote character set** parameter:



Recommended color scheme for 'putty' is (all other values can remain as they are by default):

Color to adjust	Red	Green	Blue
Default Foreground	0	0	0
Default Foreground Bold	0	0	160
Default Background	255	255	255
Default Background Bold	192	192	192
ANSI White	223	223	223

Menu Options

- Install/Upgrade/Remove CHARON
- Network Configuration Utility
- License key display/email
- Request for New or Update license (send C2V file)
- Install or Update (apply V2C file)
- Check for license expiration
- Service management (Start, Stop, Manage automatic boot & shutdown)
 - Service management - Update guests list
 - Service management - Start/stop guests
 - Service management - View guest log file
 - Service management - View guest manager log file
 - Service management - Install or update service
 - Service management - Create/Edit guest stop script
 - Service management - Connect to guest console
 - Service management - Edit configuration files
 - Service management - Manage monitored guests logs
- Connect to guest console
- Edit configuration files
- Manage monitored guests logs
- Send configuration and log files via mail
- Manage recursive jobs: license expiration check, log events (cron)
- Alerts management
- Show host information (OS, HW, Charon version, utils and services)
- Documentation


Install/Upgrade/Remove CHARON

Table of contents

- Description
- Fresh CHARON installation example
- CHARON upgrade installation example
- Installation of CHARON-AXP and CHARON-VAX on the same Linux server

Description

This option is designed to perform easy installation and uninstallation of CHARON. You have just to provide the .tar.gz file (kit) location, or .tar or the folder where you extracted the kit, if you did manually, and the tool will install all packages. You can also provide a software license kit location if any, .tar or folder, the script will also perform the setup.



 It is recommended to locate all CHARON kits in the same folder as this menu will remind the last folder you used in the previous session (if not, you will be prompted to select the folder)

Notes:

- Zipped kits will be unzipped automatically (.tar.gz file)
- .tar files will be removed once extracted into their destination folder
- If the kit is provided with a .md5sum file and this file is present in the same folder as the kit, the md5sum check will be automatically performed.
- To display the options available, type "?" and press enter:

```

Enter your choice (i/u/r/s/q/?): ?
Enter:
i      - to install
u      - to uninstall (available if a product is at least installed)
r      - to reload the screen (refresh)
s      - to install/uninstall Software license
q      - to quit
? or h - to display this message
  
```

-  To upgrade CHARON-AXP or CHARON-VAX, you will need to stop the running virtual machines (AXP and VAX), uninstall the current version and install the new one.
 - If you only upgrade the CHARON Linux Toolkit, you will not have to stop the running virtual machines except if notified in Release notes document.
-  To remove CHARON-AXP or CHARON-VAX, you must ensure there is no running virtual machine related to the product
- The installation log will be stored in the /opt/charon/log folder with names yum.install.<date> (name is given at the end of the installation process)

Fresh CHARON installation example

Context:

- OS is Red Hat Enterprise Linux 7.1
- We will install CHARON-AXP V4.6 Build 168-03, WEBUI has not been downloaded and will not be installed
- License key is based on USB dongle
- We assume CHARON and the Linux Toolkit have been downloaded to the /charon folder:

```
[root@rhel71 ~]# cd /charon
[root@rhel71 charon]# ls -l
total 49912
-rw-r--r--. 1 root root 48735306 Jun 25 18:15 charon-axp-4.6-16803.68704.el65.ta
r.gz
-rw-r--r--. 1 root root      73 Jun 25 18:15 charon-axp-4.6-16803.68704.el65.ta
r.gz.md5sum
-rw-r--r--. 1 root root 2365440 May  6 14:28 charon_linux_toolkit.V41.tar
```

Execute the "menu" command and select option 1:

```
STROMASYS - Virtualization Technologies Kit#41
CHARON Linux Toolkit

CHARON installation
 1 - Install/Upgrade/Remove CHARON ←
License management
 2 - License key display/email
 3 - Request for New or Update license (send C2V file)
 4 - Install or Update (apply V2C file)
 5 - Check for license expiration
Virtual Machines (guests)
 6 - Service management (Start, Stop, Manage automatic boot & shutdown)
 7 - Connect to guest console
 8 - Edit configuration files
 9 - Manage monitored guests logs
10 - Send configuration and log files via mail
Miscellaneous
11 - Manage recursive jobs: license expiration check, log events (cron)
12 - Alerts management
13 + Show host information (OS, HW, CHARON version, utils and services)
14 + Documentation

Enter your choice ('q' to quit): █
```

For a fresh installation the setup does not know where you use to store the CHARON kits so enter the kit location (2) and select the kit you want to install (3):

```

STROMASYS - Virtualization Technologies V2.4e
Install/Upgrade/Remove CHARON

Hostname:          rhel71.localdomain
Linux version:    Red Hat Enterprise Linux Server release 7.1 (Maipo)
                  Linux 3.10.0-229.4.2.el7.x86_64

Installed packages
- License driver:  Not installed or Software license
- Base products:  No one installed

Note: If you upgrade from a Build lower than 16803, you need to uninstall the
installed Build first.

Enter your choice (i/r/s/q/?): i 1
Enter kit location (folder), . for current folder, q to quit
: /charon 2

No  Product                Version Build  Type      md5sum
---  ---                ---  ---  ---  ---
  1 charon-axp                4.6  16803 tar.gz    OK

Select the kit you want to use (q to quit): 1 3

```

The kit will then be unzipped, extracted and installed.

```

Checking charon-axp-4.6-16803.68704.el65.tar.gz file (md5sum) ... ✓
Success.
Unzipping file...
Extracting tar file...
Done.
Removing tar file...

Loaded plugins: langpacks, product-id, subscription-manager
Examining aksusbd-2.4-1.i386.rpm: aksusbd-2.4-1.i386
Marking aksusbd-2.4-1.i386.rpm to be installed
Examining charon-axp-4100-4.6-16803.68704.el65.x86_64.rpm: charon-axp-4100-4.6-1
6803.x86_64
Marking charon-axp-4100-4.6-16803.68704.el65.x86_64.rpm to be installed
Examining charon-axp-ds10-4.6-16803.68704.el65.x86_64.rpm: charon-axp-ds10-4.6-1
6803.x86_64
Marking charon-axp-ds10-4.6-16803.68704.el65.x86_64.rpm to be installed
Examining charon-axp-ds20-4.6-16803.68704.el65.x86_64.rpm: charon-axp-ds20-4.6-1
6803.x86_64

```


CHARON-AXP is now installed as shown below:

```

STROMASYS - Virtualization Technologies V2.4e
Install/Upgrade/Remove CHARON

Hostname:          rhel71.localdomain
Linux version:    Red Hat Enterprise Linux Server release 7.1 (Maipo)
                  Linux 3.10.0-229.4.2.el7.x86_64

Installed packages
- License driver:  aksusbd-2.4-1.i386
- Base products:  charon-base V4.6 B16803
- Packages :      axp/4100 axp/ds10 axp/ds20 axp/es40 axp/gs160
                  axp/gs320 axp/gs80

Note: If you upgrade from a Build lower than 16803, you need to uninstall the
installed Build first.

Enter your choice (i/u/r/s/q/?): █

```

CHARON upgrade installation example

- All running virtual machines have to be shutdown before upgrade
- If you upgrade from a Build lower than 16803, you will need to uninstall the installed Build first. Starting with build 16803, upgrades can be performed without uninstall

Context:

- OS is Red Hat Enterprise Linux 7.1
- We will upgrade CHARON-AXP V4.6 Build 168-03 to V4.6 Build 168-04
- We assume the patch has been downloaded to the /charon folder:

```

[root@rhel71 charon]# ls -l
total 49916
drwxrwxr-x. 2 500 500      4096 Jun 25 18:24 charon-axp-4.6-16803.68704.el65
-rw-r--r--. 1 root root      73 Jun 25 18:15 charon-axp-4.6-16803.68704.el65.ta
r.gz.md5sum
-rw-r--r--. 1 root root 48731653 Jun 25 18:31 charon-axp-4.6-16804.68704.el65.ta
r.gz
-rw-r--r--. 1 root root      73 Jun 25 18:31 charon-axp-4.6-16804.68704.el65.ta
r.gz.md5sum
-rw-r--r--. 1 root root 2365440 May  6 14:28 charon_linux_toolkit.V41.tar

```

Execute the "menu" command and select option 1, select installation as described below:

```

STROMASYS - Virtualization Technologies V2.4e
Install/Upgrade/Remove CHARON

Hostname:          rhel71.localdomain
Linux version:    Red Hat Enterprise Linux Server release 7.1 (Maipo)
                  Linux 3.10.0-229.4.2.el7.x86_64

Installed packages
- License driver: aksusbd-2.4-1.i386
- Base products:  charon-base V4.6 B16803
- Packages :      axp/4100 axp/ds10 axp/ds20 axp/es40 axp/gsl60
                  axp/gs320 axp/gs80

Note: If you upgrade from a Build lower than 16803, you need to uninstall the
installed Build first.

Enter your choice (i/u/r/s/q/?): i
Enter kit location (folder), . for current folder, q to quit
[/charon] :

No  Product          Version Build  Type      md5sum
-----
  1  charon-axp          4.6      16803  folder     -
  2  charon-axp          4.6      16804  tar.gz     OK

Select the kit you want to use (q to quit): 2

```

Upgrade will executed. Once completed, you can check the installed version:

```

STROMASYS - Virtualization Technologies V2.4e
Install/Upgrade/Remove CHARON

Hostname:          rhel71.localdomain
Linux version:    Red Hat Enterprise Linux Server release 7.1 (Maipo)
                  Linux 3.10.0-229.4.2.el7.x86_64

Installed packages
- License driver: aksusbd-2.4-1.i386
- Base products:  charon-base V4.6 B16804
- Packages :      axp/4100 axp/ds10 axp/ds20 axp/es40 axp/gsl60
                  axp/gs320 axp/gs80

Note: If you upgrade from a Build lower than 16803, you need to uninstall the
installed Build first.

Enter your choice (i/u/r/s/q/?):

```

Installation of CHARON-AXP and CHARON-VAX on the same Linux server

Starting with build 16803, if you install CHARON-AXP and CHARON-VAX on the same server, they must be the same build

Context:

- OS is Red Hat Enterprise Linux 7.1
- We will install CHARON-VAX V4.6 Build 168-03 on a server where CHARON-AXP V4.6 Build 168-03 is already installed
- We assume the patch has been downloaded to the /charon folder

Execute the "menu" command and select option 1 and ensure the already installed CHARON-AXP build matches the CHARON-VAX:

```

STROMASYS - Virtualization Technologies V2.4e
Install/Upgrade/Remove CHARON

Hostname:          rhel71.localdomain
Linux version:    Red Hat Enterprise Linux Server release 7.1 (Maipo)
                  Linux 3.10.0-229.4.2.el7.x86_64

Installed packages
- License driver:  aksusbd-2.4-1.i386
- Base products:   charon-base V4.6 B16803
- Packages :       xap/4100 xap/ds10 xap/ds20 xap/es40 xap/gsl60
                  xap/gs320 xap/gs80

Note: If you upgrade from a Build lower than 16803, you need to uninstall the
installed Build first.

Enter your choice (i/u/r/s/q/?): i

Enter kit location (folder), . for current folder, q to quit
[/charon] :

No  Product          Version Build  Type      md5sum
---  ---
 1 charon-axp          4.6  16803  folder   -
 2 charon-axp          4.6  16804  folder   -
 3 charon-vax          4.6  16803  folder   -

Select the kit you want to use (q to quit): 3

```

i The program remembers the folder where you stored the kit during installation so you will have just to press enter when asking for the kit location at next installation

We can now proceed with the installation of CHARON-VAX. Once completed, you can check the installed packages:

```

STROMASYS - Virtualization Technologies V2.4e
Install/Upgrade/Remove CHARON

Hostname:          rhel71.localdomain
Linux version:    Red Hat Enterprise Linux Server release 7.1 (Maipo)
                  Linux 3.10.0-229.4.2.el7.x86_64

Installed packages
- License driver:  aksusbd-2.4-1.i386
- Base products:   charon-base V4.6 B16803
- Packages :       xap/4100 xap/ds10 xap/ds20 xap/es40 xap/gsl60
                  xap/gs320 xap/gs80 vax/6610 vax/6620 vax/6630
                  vax/6640 vax/6650 vax/6660 vax/xl vax/xm ✓

Note: If you upgrade from a Build lower than 16803, you need to uninstall the
installed Build first.

Enter your choice (i/u/r/s/q/?):

```

Network Configuration Utility

Table of contents

- Description
- Example

Description

This option will launch the "Network Configuration Utility" (`ncu`) if installed (Linux distribution/version and CHARON product version dependent)

i Refer to the corresponding CHARON product version documentation for more (Installation chapter then "Configuration with NCU utility")

Example

```
STROMASYS - Virtualization Technologies V1.0
Network Configuration Utility

CHARON Network Configuration Utility, STROMASYS (c) 2015 Version 1.5

Interfaces      Dedicated to   State
-----
eth0            host          connected to host
eth1            CHARON        unmanaged from host
=====
bridge name     bridge id           STP enabled   interfaces
select action:
1 - Dedicate to CHARON
2 - Release to host
3 - Create Bridge with TAPs
4 - Remove Bridge
5 - Print status
6 - Exit
:>
```

License key display/email

Description

This option will allow you to display the license content.

i It will work even if you are logged in via 'ssh'. See CHARON on Linux - Cannot get license information or run guests over ssh for more information

One displayed, the program will allow you to send the result via email.

Licenses descriptions can be added to the display list by creating, manually, a file named `/opt/charon/utils/charon_licenses.list`

This file will contain first the license number, a description and an ANSI color code (see `# man terminfo` and search for Color), each parameter separated by a comma. One line per license.

Example:

```
# cat /opt/charon/utils/charon_licenses.list
1002922;Main license, on USB base extension;2
```

Example

```
STROMASYS - Virtualization Technologies V1.4
License key display/email

Please wait, generating output... █
```

```
...
STROMASYS - Virtualization Technologies V1.4
License key display/email

License number Type Key ID Description
-----
1002922 USB 879642840 Main license, on USB base extension

Available editors
g - gedit (windows notepad like)
n - nano (basic text editor)
v - vi (advanced users standard text editor)
m - vim (advanced users improved text editor)
q - quit
Select the editor you want to use: █
```

```
STROMASYS - Virtualization Technologies V1.4
License key display/email

License number Type Key ID Description
-----
1002922 USB 879642840 Main license, on USB base extension

Available editors
g - gedit (windows notepad like)
n - nano (basic text editor)
v - vi (advanced users standard text editor)
m - vim (advanced users improved text editor)
q - quit
Select the editor you want to use: m

Do you want to send file via mail (y/n) ? y
Enter the email recipient (q to quit) []: kirk@enterprise.us
```

i If you decide to send the result via email, you will receive one with subject: "[CHARON] View license HASP_SRM_VIEW"

Request for New or Update license (send C2V file)

Description

This option creates a C2V file to be sent to Stromasys in order to update your license.

- If you use a hardware license (USB stick) then use option 1.
- Option 2 is used to generate a fingerprint to obtain a software license (no USB stick)



Send it first to yourself and not directly to Stromasys as mentioned in the [Note related to emails](#)

Example

```
STROMASYS - Virtualization Technologies V1.5
Create and send C2V file

Collect information to:
1 - Update a Hardware License (1 dongle detected)
2 - Generate a Software License (fingerprint)

Enter your choice (q to quit) : 1

License number: 1002922

Please wait, generating C2V file...

C2V file generated: /tmp/1002922_20150818_134230.c2v

Do you want to send file via mail (y/n) ? y

Enter the email recipient (q to quit) []: kirk@enterprise.us
```



Step3: enter the email recipient or press enter to use the latest recipient entered from any other menu option that sends emails.

You will then receive an email with subject: "[CHARON] C2V file / License xxx" where xxx represents the license number or "[CHARON] C2V file / Collect for Software License" if you used option 2.

Install or Update (apply V2C file)

Table of contents

- Description
- Using Graphical User Interface (GUI)
- Using Character User Interface (CUI)

Description

This option either:

- opens Firefox Web browser (Graphical User Interface) in order to apply the V2C file you received from Stromasys or
- if the 'hasp_update' executable file is present, coming from the CHARON kit (starting V4.6) or from a provided HASP SL runtime package, allows you to apply updates from a Character User Interface.

Using Graphical User Interface (GUI)

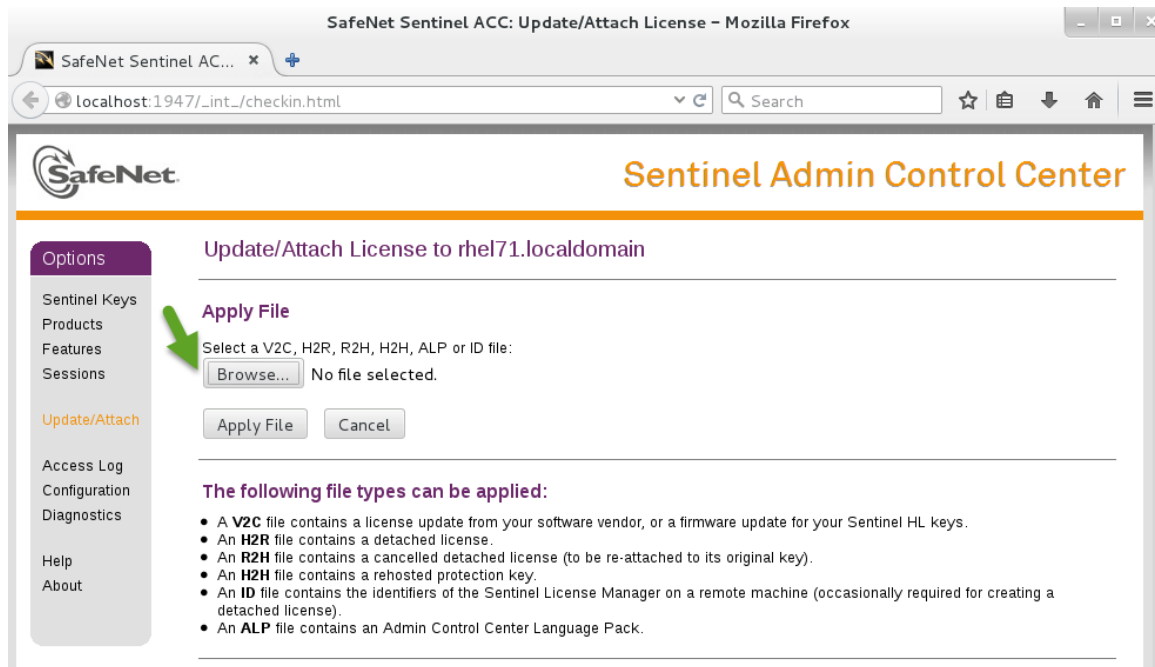
Select option 1 from the menu:

```
STROMASYS - Virtualization Technologies V1.1
Install or Update (apply V2C file)

1 - Use Firefox for license update/install (GUI)
2 - Use the Character User Interface (CUI)
q - quit

Enter your choice: 1
```

and click on the Browse button to select and apply the V2C files:



i In case of update, install the `_fmt.v2c` file first (`_fmt` = format)


Using Character User Interface (CUI)

Select option 2 from the menu:

```
STROMASYS - Virtualization Technologies V1.1
Install or Update (apply V2C file)

1 - Use Firefox for license update/install (GUI)
2 - Use the Character User Interface (CUI)
q - quit

Enter your choice: 2
```





You will have, if not already done, to specify the container (folder) where you store all the .v2c files.


Example:

```
STROMASYS - Virtualization Technologies V1.1
Install or Update (apply V2C file)

Available options
1 - Install new license
2 - Update license
3 - set license files folder
q - quit

Enter your choice: 3
Enter the folder name [] (q to quit): /charon/licenses
```

 The specified folder must already exist. In the example above, we used the "# `mkdir -p /charon/licenses`" command to create the container

Install or update your license:

- In case the license is installed on the USB dongle for the first time, use option 1.
- In case you add new products, update settings (more cpus, more memory...) or extend the expiration date, option 2 will be used.



Example:

```
STROMASYS - Virtualization Technologies V1.1
Install or Update (apply V2C file)

Available options
1 - Install new license
2 - Update license
3 - set license files folder
q - quit

Enter your choice: 3
Enter the folder name [] (q to quit): /charon/licenses
```

The license updates will be applied in the order specified.

-  In case errors are detected during update, common errors codes and their explanation are displayed.
-  If the error code is not listed there, you can have a look at this article: [hasp_update utility returns error message](#) (if the code is not listed there, please contact our support)

Check for license expiration

Description

This option checks the license expiration dates interactively.

i This check is also performed automatically, by default everyday at 09:00 AM, and starts sending alerts 15 days before expiration. See [Manage recursive jobs: license expiration check, log events \(cron\)](#)

Alert levels are defined as follows:

Days before expiration (date limited license)	Hours before expiration (time limited license)	Alert Level
More than 7	More than 72 hours	INFORMATIONAL
Between 4 and 7	Between 49 and 72 hours	MINOR
Between 2 and 3	Between 25 and 48 hours	MAJOR
Less than 2	Between 0 and 24 hours	CRITICAL
< 0	0 hours and 0 minutes	EXPIRED

Examples

Example - Valid licenses

```

STROMASYS - Virtualization Technologies V1.5d
Check for license expiration

Product Name                               Expiration                               Alert level
-----
License: 1002922 (USB) KeyID: 879642840  Main license, on USB base extension
CHARON-AXP/4100                             05-Nov-2015                             INFORMATIONAL
CHARON-AXP/DS10                             05-Nov-2015                             INFORMATIONAL
CHARON-AXP/DS20                             05-Nov-2015                             INFORMATIONAL
CHARON-AXP/ES40                             05-Nov-2015                             INFORMATIONAL
CHARON-AXP/GS80                             05-Nov-2015                             INFORMATIONAL
CHARON-AXP/SMA VAR all Signatures for Windows 05-Nov-2015                             INFORMATIONAL
CHARON-VAX/XM Plus for Windows              05-Nov-2015                             INFORMATIONAL
CHARON-VAX/XL Plus for Windows              05-Nov-2015                             INFORMATIONAL
CHARON-VAX-66xx all models                  05-Nov-2015                             INFORMATIONAL

Press ENTER to continue.

```

Example - Expired Software License

```

STROMASYS - Virtualization Technologies V1.5d
Check for license expiration

Product Name                               Expiration                               Alert level
-----
License: 7002058 (Soft)                    14-May-2015                             EXPIRED
CHARON-AXP/DS20

Press ENTER to continue.
    
```

Example - Runtime limited license

```

STROMASYS - Virtualization Technologies V1.5d
Check for license expiration

Product Name                               Expiration                               Alert level
-----
License: 1000.806 (USB) KeyID: 1619329274 Backup license, path 1/0/0
CHARON-AXP/DS20                            25 hours 0 minutes MAJOR
CHARON-VAX/XM Plus for Windows             25 hours 0 minutes MAJOR

Press ENTER to continue.
    
```

Service management (Start, Stop, Manage automatic boot & shutdown)

Table of Contents

- Description
- Menu description
- Examples
 - Red Hat 6 - Virtual machine up and running
 - Red Hat 7 - Virtual machine up and running
 - Red Hat 7 - Virtual machine failed due to kill signal sent by the administrator
- Menu options

Description




Guests (CHARON virtual machines) are managed as services, this menu option allows you to start and stop them on your or on system request (Linux server boot & shutdown).

The service works with a guests list containing the emulator executable file name, configuration file and, optionally, the `auto_boot` on server startup (⚠ at service level, not same as SRM console level) parameters:

- **Startup:** the virtual machine is executed in detached mode (using `'-d'` parameter) and then requires the console to be set as virtual serial line.
 - Connection to the console will be performed using `telnet` on defined localhost / port. This can also be performed using other utilities like `putty`. If there is more than one guest on the server, guests are started in parallel.
 - Before the guest starts, the network interfaces used will be checked and all the offload parameters will be set offline
- **Shutdown:** a common shutdown script can be created for guests shutdown. See "Service management - Create/Edit guest stop script" for details.
 - If the script does not exist, the virtual machine process is killed without proper guest shutdown.
 - If the script exists, it executes the customer defined command lines to perform a proper shutdown (using `'ssh'` or `'expect'` tool for example). If the virtual machine process is still running after execution, the stop operation is considered as failed so for Linux systems not using `systemd` (Red Hat 6) the script must stop the emulator either by sending a `"power off"` at SRM prompt (AXP) or F6 key (VAX) with `'expect'` or just by killing the process. For Linux systems using `systemd` (Red Hat 7 and Fedora), the process is killed by the system.
 - If there is more than one guest on the server, guests are stopped in sequential mode based on their order in the guests list. This order can be modified from the menu: ⚠ this is valid only for Linux systems not using `systemd` (Red Hat 6), for other systems, the services description files will have to be modified to add dependencies using `Before=` or `After=` for example. ⓘ For more information, see manpages: # `man systemd.unit`

Menu description

- The first part of the menu displays **server information** like server boot time, current time (at display), number of CPUs and Memory Free / Total.
- The second part displays the **list of virtual machines** (guests) managed. Column details:

Column	Description
Emulator/Config File	Emulator used with its configuration file name (shortened)
CPU	<p>Displays the number of CPUs by looking into configuration file settings (set n_of_cpus ...) first then using default value for the selected hardware. If no information is available, "-" is displayed instead.</p> <p> The number of CPUs displayed does not represent the number defined in the configuration file or the default number of cpus for this hardware model. The real number of CPUs the virtual machine owns depends on the CHARON server HW limitations, CHARON licenses and also licenses on the virtual machine side</p>
Mem	Displays the amount of memory defined in the configuration file (if defined). If no information is available, "-" is displayed instead.
State	<ul style="list-style-type: none"> • For Red Hat 6 <ul style="list-style-type: none"> • can be either RUNNING, STARTING, STARTING/ALL (if all guests have been started at the same time), STOPPED. • If the guest is in STOPPED state, an additional information will be displayed: <ul style="list-style-type: none"> • REQUESTED: the service has been stopped by user request or has not been started on Linux server boot due to boot parameter set to off • FAILURE: the guest process failed • For Red Hat 7 and Fedora (using both <code>systemd</code>) <ul style="list-style-type: none"> • can be either ACTIVE, ACTIVATING, INACTIVE, DEACTIVATING, FAILED or UNKNOWN • If the guest is in STOPPED state, an additional information will be displayed: <ul style="list-style-type: none"> • REQUESTED: the service has been stopped by user request or has not been started on Linux server boot due to boot parameter set to off • FAILURE: the guest process failed
Stop script	<p>Displays the status of the stop script used to perform a clean shutdown of the guest. Can be:</p> <ul style="list-style-type: none"> • Not found: the script has not been created.  In this case, a service stop request will induce a kill of the emulator process • To customize: the script exists and a case line has been added for the specified configuration file. It must however be customized with your commands to perform a clean shutdown of the guest (OpenVMS or Tru64 virtual machine).  For more information, see Service management - Create/Edit guest stop script • Case not set: the script exists but does not relate to the specified configuration file. This means it has either been created manually or initialized automatically by the menu and you added a new guest.
B	Displays the Boot server startup value, Yes or No.

- The third part displays the available options that are detailed below.

Examples

Red Hat 6 - Virtual machine up and running

```
STROMASYS - Virtualization Technologies V2.2
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Mon 06-Jul-2015 17:33:00 - Current: Tue 18-Aug-2015 14:22:53
Number of CPUs: 3 - Memory(free/tot): 2,598,836kB / 8,053,848kB (32%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  RUNNING    Customized    N
  Started: Tue 18-Aug-2015 14:22:10

Available options
1 - Update guests list      6 - Create/Edit guest stop script
2 - Start/stop guests      7 - Connect to guest console
3 - View latest guest log file 8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Install or update service q - quit

Enter your choice (enter to refresh): █
```

Red Hat 7 - Virtual machine up and running

```
STROMASYS - Virtualization Technologies V2.2
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Wed 29-Jul-2015 13:43:00 - Current: Tue 18-Aug-2015 14:28:50
Number of CPUs: 3 - Memory(free/tot): 1,060,864kB / 3,868,776kB (27%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  ACTIVE     Customized    N
  Description: DEMO as4100 pluto
  Started: Tue 2015-08-18 14:28:28 CEST (PID=39209)

Available options
1 - Update guests list      6 - Create/Edit guest stop script
2 - Start/stop guests      7 - Connect to guest console
3 - View latest guest log file 8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services q - quit

Enter your choice (enter to refresh): █
```

i Due to improvements added in service management with systemd, more information is displayed on the service

Red Hat 7 - Virtual machine failed due to kill signal sent by the administrator

```

STROMASYS - Virtualization Technologies V2.2
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Wed 29-Jul-2015 13:43:00 - Current: Tue 18-Aug-2015 14:30:42
Number of CPUs: 3 - Memory(free/tot): 2,607,972kB / 3,868,776kB (67%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  FAILED    Customized   N
  Description: DEMO as4100 pluto
  Stopped: Tue 2015-08-18 14:30:41 CEST (Result: signal/KILL)

Available options
1 - Update guests list      6 - Create/Edit guest stop script
2 - Start/stop guests      7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file  9 - Manage monitored guests logs
5 - Manage 'systemd' services  q - quit

Enter your choice (enter to refresh): █

```

i A "kill -kill <pid>" command has been sent to the virtual machine process.

Menu options

- Service management - Update guests list
- Service management - Start/stop guests
- Service management - View guest log file
- Service management - View guest manager log file
- Service management - Install or update service
- Service management - Create/Edit guest stop script
- Service management - Connect to guest console
- Service management - Edit configuration files
- Service management - Manage monitored guests logs

Service management - Update guests list

Table of Contents

- Description
- Add guest
- Remove guest
- Enable/Disable start at server boot
- Edit guests lists (for stop order)


Description


This option allows you to add virtual machines (guests), remove, enable/disable start at server boot or change the stop order.

Add guest

Available emulated hardware is displayed based on installed packages. You can also display available hardware you can use based on your license by entering "v".

Select the emulator you want to add based on the "Available emulated hardware" list then you can then enter the name of the configuration file you previously created/edited (out of the menu) or clone (c) an existing one based on the list you can display (l).

 Once cloned, the configuration file must be edited to change settings like disks, network interface(s), etc..

 A check is performed to verify the same network interface and same console ports are not already used.

Once added, you can start the guest directly.

Example: Red Hat Enterprise Linux 7.1 server with CHARON-AXP V4.6 installed

```
STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 12:15:53
Number of CPUs: 3 - Memory(free/tot): 1,677,268kB / 3,868,776kB (43%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
None.

Available options
1 - Update guests list    6 - Create/Edit guest stop script
2 - Start/stop guests    7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file  9 - Manage monitored guests logs
5 - Manage 'systemd' services  q - quit

Enter your choice (enter to refresh): █
```

We are now going to update the guests list and add a virtual machine:

```

Enter your choice (enter to refresh): 1
Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 12:31:54
Number of CPUs: 3 - Memory(free/tot): 1,646,412kB / 3,868,776kB (42%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
None.

Available options
-----
1 - Add guest
2 - Remove guest
3 - Enable/Disable start at server boot
4 - Edit guests list (for stop order)
q - quit

Enter your choice: 1

```

An AlphaServer 4100 (1) will be added by cloning the as4100 configuration file template (2 & 3) to the /charon/pluto.cfg (4 & 5):

```

Available emulated hardware
-----
as1000 as1000a as1200 as2000 as2100 as400 as4000 as4100 as800 ds10 ds10l ds15 ds
20 ds25 es40 es45 gs160 gs320 gs80

Select virtual HW model, license conditioned
(v to view HW on license key, q to quit): as4100
Virtual Hardware selected: CHARON-AXP/AS4100 for Linux, Version 4.6.16804

Configuration file selection
-----
Please enter configuration file full path ('l' to list available ones in the
default directory, 'c' to clone file, 'q' to quit) : c
Enter source file (q to quit) : /opt/charon/cfg/as4100.cfg.template
Last modified on May 26 08:49
Enter target file (q to quit) : /charon/pluto.cfg
Please confirm (y/n) ? y

```

i Use the 'l' option to list available configuration files and templates

Once the clone is complete, we can leave the clone utility (1 & 2 below) and use (3) and customize the newly created file (4 & 5):

```
Copying '/opt/charon/cfg/as4100.cfg.template' to '/charon/pluto.cfg' ...
Done.
```

```
Enter target file (q to quit) : q
```

```
Enter source file (q to quit) : q
```

Configuration file selection

```
Please enter configuration file full path ('l' to list available ones in the
default directory, 'c' to clone file, 'q' to quit) : /charon/pluto.cfg
```

Console settings **not set to 'virtual_serial_line'. Please check.**

Guest added.

Service charon_pluto.service is enabled.

Configuration file must be updated before starting the guest.

```
Do you want to edit this file (y/n) ? y
```

Available editors

g - gedit (windows notepad like)

e - emacs (windows notepad like, advanced)

n - nano (basic text editor)

v - vi (advanced users standard text editor)

m - vim (advanced users improved text editor)

```
Select the editor you want to use: m
```

i If you don't edit the file now, you won't be prompted to start the guest (virtual machine)

Using the selected editor, "as4100/pluto" configuration file can be customized:

```
#-----
# AS4100 / pluto - demo
#-----
set session hw_model="AlphaServer_4100"

set session log="/charon/pluto.log" log_method="append"

set ace cpu_architecture = EV56
set rom dsrdb[0] = 1408 system_name = "AlphaServer 4100 5/400"

set session n_of_cpus=1
set ram size=256

set rom container="/charon/pluto.bin"
set toy container="/charon/pluto.dat"

load virtual_serial_line OPA0 port=10011
set OPA0 stop_on = F6
set OPA0 log = "/consolelogs"

load DE500BA/dec21x4x EWA interface=EWA0
load packet_port/chnetwrk EWA0 interface="(disabled)"

set PKA container[0] = "/data/disks/pluto_tru64.vdisk"
```

When leaving the editor, the guest log file name is extracted and the monitoring service is enabled (installed).

We can now start the guest (1) and optionally have a continuous view of the log file (2):

```

Log file is set to: /charon/pluto.log

Log file /charon/pluto.log added to log monitor service.
Service charon_logmon_pluto.service is enabled.

Checking network interfaces...

WARNING: Found disabled interface

Do you want to start this guest (y/n) ? y
Starting charon_logmon_pluto.service at 02-Jul-2015 13:29:20
Status: active
Restarting aksusbd log monitor service...
Starting charon_pluto.service at 02-Jul-2015 13:29:24

Do you want to view the log file (y/n) ? y

```

```

Continuous view of /charon/pluto.log
Press CTRL-C to stop (it is recommended to enlarge screen to 132 cols minimum)

20150702:132933:INFO :0:000003A5:hexane.cxx(5357): session is loading built-in
configuration "AlphaServer_4100"...
20150702:132933:INFO :0:000003A6:hexane.cxx(5381): session has finished loading
built-in configuration "AlphaServer_4100".
20150702:132933:INFO :0:000003AA:hexane.cxx(5470): session is loading configura
tion file "/charon/pluto.cfg"...
20150702:132933:INFO :0:000003AB:hexane.cxx(5500): session has finished loading
configuration file "/charon/pluto.cfg".
20150702:132933:INFO :0:0000032B:hexane.cxx(2588): Start request received.
20150702:132934:INFO :0:000003AC:hexane.cxx(1283): session's process affinity i
s 0000000000000007, system affinity is 0000000000000007.
20150702:132934:INFO :0:000003D1:hexane.cxx(1537): session's I/O domain affinit
y is 0000000000000001, CPU domain affinity is 0000000000000006
20150702:132934:INFO :0:000003BA:ll_sentine( 750): Looking for a license key ..
.
20150702:132937:INFO :0:000003DC:ll_sentine( 845): ... found license key 879642
840.
20150702:132938:INFO :0:0000024D:hexane.cxx(2729): STROMASYS SA, (C) 2009-2015
20150702:132938:INFO :0:00000350:hexane.cxx(2775): CHARON-AXP/4100 (AlphaServer
4100), V 4.6 B 16804, May 26 2015 / 1002922 / 879642840
20150702:132938:INFO :0:00000336:hexane.cxx(2802): The end user of this softwar
e has agreed to STROMASYS' Terms and Conditions for Software License and Limited
Warranty, as described at: http://www.stromasys.com/pub/doc/30-17-033.pdf
20150702:132938:INFO :0:0000009D:hexane.cxx(2879): License info:
CHARON product code: "CHAXP-806xx-xI".
Licensed to: "Stromasys SA".
Date limited license, limited to: 5/Nov/2015 00:55:00.
Warning: setting the host system date back will permanently invalidate the licen
se key.

```

Press **CTRL-C** at any time to leave the log file view. The service status will then be displayed for information (this view depends on Linux distribution and version):

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Viewing service status
charon_pluto.service - CHARON as4100/pluto
  Loaded: loaded (/etc/systemd/system/charon_pluto.service; enabled)
  Active: active (running) ✓ since Thu 2015-07-02 13:29:33 CEST; 2min 9s ago
  Process: 128724 ExecStart=/opt/charon/utills/charon_gstart start /charon/pluto.
  cfg (code=exited, status=0/SUCCESS)
  Main PID: 128919 (AlphaServer_410)
  CGroup: /system.slice/charon_pluto.service
          └─128919 /opt/charon/bin/as4100 -d /charon/pluto.cfg

Jul 02 13:29:24 rhel71.localdomain systemd[1]: Starting CHARON as4100/pluto...
Jul 02 13:29:24 rhel71.localdomain charon_gstart[128724]: [INFO ] aksusbd monito
r service status is: active
Jul 02 13:29:24 rhel71.localdomain charon_gstart[128724]: [INFO ] Log monitor se
rvice status is: active
Jul 02 13:29:33 rhel71.localdomain charon_gstart[128724]: [INFO ] License found.
Jul 02 13:29:33 rhel71.localdomain charon_gstart[128724]: [INFO ] Checking netwo
rk settings...
Jul 02 13:29:33 rhel71.localdomain charon_gstart[128724]: [INFO ] Starting emula
tor: /opt/charon/bin/as4100 -d /charon/pluto.cfg
Jul 02 13:29:33 rhel71.localdomain systemd[1]: Started CHARON as4100/pluto.
Press enter to refresh, q to quit: q
    
```

Enter 'q' multiple times until you reach the "Service management" menu: we can see below the service is active, meaning the emulator is running (⚠️ this does not mean "booted") and will be automatically restarted on Linux server reboot. The "Stop script" column shows the script has not been initialized meaning the guest will receive a SIGKILL signal upon stop request. This will be explained further (see [Service management - Create/Edit guest stop script](#))

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)


Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 13:34:13
Number of CPUs: 3 - Memory(free/tot): 133,028kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  ACTIVE ✓      Not found    Y
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 13:29:33 CEST (PID=128919)

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh):
    
```

Remove guest

 Before removing a guest, you must ensure the it has been stopped. A check will automatically be performed before removal and you will be proposed to stop it. The way the guest is stopped is dependent on the "Stop script" existence and settings (see [Service management - Create/Edit guest stop script](#))

 If the guest log is monitored, you will be proposed to stop and remove the monitoring service

Example: Red Hat Enterprise Linux 7.1 server with CHARON-AXP V4.6 installed, virtual machine as4100/pluto installed

We are now going to remove (1) the as4100/pluto guest, currently in active state:

```
Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 14:15:32
Number of CPUs: 3 - Memory(free/tot): 130,604kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto          1 256M  ACTIVE     Not found    Y
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 13:29:33 CEST (PID=128919)

Available options
1 - Add guest
2 - Remove guest
3 - Enable/Disable start at server boot
4 - Edit guests list (for stop order)
q - quit

Enter your choice: 2 1

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 14:15:38
Number of CPUs: 3 - Memory(free/tot): 131,148kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto          1 256M  ACTIVE     Not found    Y
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 13:29:33 CEST (PID=128919)

Please confirm the removal of as4100/pluto.cfg (y/n) : y 2
```

No stop script has been defined so this guest will be stopped (1 below) without proper shutdown (emulator process will receive a SIGKILL)

```

No stop script found, emulator will be killed without proper shutdown !!!
Do you want to stop the guest now (y/n) ? y
Stopping charon_pluto.service at 02-Jul-2015 14:17:06

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Viewing service status
charon_pluto.service - CHARON as4100/pluto
Loaded: loaded (/etc/systemd/system/charon_pluto.service; enabled)
Active: failed (Result: signal) since Thu 2015-07-02 14:17:19 CEST; 3s ago
Process: 15851 ExecStop=/opt/charon/utils/charon_gstart stop /charon/pluto.cfg
(code=exited, status=0/SUCCESS)
Process: 128724 ExecStart=/opt/charon/utils/charon_gstart start /charon/pluto.
cfg (code=exited, status=0/SUCCESS)
Main PID: 128919 (code=killed, signal=KILL)

Jul 02 13:29:33 rhel71.localdomain charon_gstart[128724]: [INFO ] Starting emula
tor: /opt/charon/bin/as4100 -d /charon/pluto.cfg
Jul 02 13:29:33 rhel71.localdomain systemd[1]: Started CHARON as4100/pluto.
Jul 02 14:17:06 rhel71.localdomain systemd[1]: Stopping CHARON as4100/pluto...
Jul 02 14:17:06 rhel71.localdomain charon_gstart[15851]: [INFO ] Stopping...
Jul 02 14:17:06 rhel71.localdomain charon_gstart[15851]: :no stop script,kill 12
8919[WARN ] No stop script defined, sending KILL signal to emulator, pid 128919
Jul 02 14:17:06 rhel71.localdomain charon_gstart[15851]: [INFO ] Waiting for pro
cess id 128919 termination
Jul 02 14:17:07 rhel71.localdomain systemd[1]: charon_pluto.service: main proces
s exited, code=killed, status=9/KILL
Jul 02 14:17:12 rhel71.localdomain charon_gstart[15851]: [INFO ] Process id 1289
19 has terminated
Jul 02 14:17:19 rhel71.localdomain systemd[1]: Stopped CHARON as4100/pluto.
Jul 02 14:17:19 rhel71.localdomain systemd[1]: Unit charon_pluto.service entered
failed state.
Press enter to refresh, q to quit (FAILED status means STOPPED): q

```

As the guest has been deleted, the log monitoring service can also be removed (1 below):


```

Removing from guests list...
Done.
Configuration file is kept in place.
Do you want to remove the log monitoring service (y/n) ? y
rm '/etc/systemd/system/multi-user.target.wants/charon_logmon_pluto.service'

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 14:18:41
Number of CPUs: 3 - Memory(free/tot): 1,668,356kB / 3,868,776kB (43%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
None.

Guests list is empty.

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 14:18:41
Number of CPUs: 3 - Memory(free/tot): 1,668,944kB / 3,868,776kB (43%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
None.

Available options
1 - Add guest
2 - Remove guest
3 - Enable/Disable start at server boot
4 - Edit guests list (for stop order)
q - quit

Enter your choice: █

```

We can now add another guest if needed (2).

i You can add multiple CHARON guests on the Linux server. This is however limited by your license (available products and instances allowed) and the Linux server hardware configuration.

Enable/Disable start at server boot

Use this option if you want (default) or do not want a guest to be started at Linux server boot

i By default newly added guests are started automatically at Linux server boot (⚠ this does not mean "booted")

Example: Red Hat Enterprise Linux 7.1 server with CHARON-AXP V4.6 installed, virtual machine as4100/pluto installed

```

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 14:41:09
Number of CPUs: 3 - Memory(free/tot): 115,784kB / 3,868,776kB (2%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto           1 256M  ACTIVE     Not found    Y
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 14:40:43 CEST (PID=24188)

Available options
1 - Add guest
2 - Remove guest
3 - Enable/Disable start at server boot
4 - Edit guests list (for stop order)
q - quit

Enter your choice: 3

```


We are now going to prevent from the as4100/pluto guest to be started automatically (1). Once completed enter 'n' to return to the previous menu (2):

```

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 14:42:15
Number of CPUs: 3 - Memory(free/tot): 112,344kB / 3,868,776kB (2%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto           1 256M  ACTIVE     Not found    Y
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 14:40:43 CEST (PID=24188)


Please confirm as4100/pluto boot change to NO (y/n) : y
Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 14:42:18
Number of CPUs: 3 - Memory(free/tot): 111,384kB / 3,868,776kB (2%)


Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto           1 256M  ACTIVE     Not found    N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 14:40:43 CEST (PID=24188)


Please confirm as4100/pluto boot change to YES (y/n) : n
    
```

Edit guests lists (for stop order)

Use this option to change the order of managed guests using the text editor of your choice

 Use with caution, do not add nor delete lines (or at your own risk)

 This option is not active for Linux systems using `systemd` (Red Hat Enterprise Linux 7 and Fedora).

 For Linux systems using `systemd` (Red Hat Enterprise Linux 7 and Fedora), the services description files will have to be modified to add dependencies using `Before=` or `After=` for example.

 For more information, see manpages: # `man systemd.unit`

Service management - Start/stop guests

Table of Contents

- Description
- Examples
 - Example1 - Guest stop with no stop script defined
 - Example2 - Guest start
 - Example3 - Guest stop with stop script defined

Description

This option allows you to start and stop managed guests.

Examples

Example1 - Guest stop with no stop script defined

Context: Red Hat Enterprise Linux 7.1 server with CHARON-AXP V4.6 installed, as4100/pluto guest running

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:01:56
Number of CPUs: 3 - Memory(free/tot): 121,148kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  ACTIVE     Not found    N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 14:40:43 CEST (PID=24188)

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests           7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): 2 1

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:07:36
Number of CPUs: 3 - Memory(free/tot): 121,092kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto            1 256M  ACTIVE     Not found    N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 14:40:43 CEST (PID=24188)

!
No stop script found, emulator will be killed without proper shutdown !!!

Please confirm you want to stop as4100/pluto.cfg (y/n) : y 2

```

Due to the absence of stop script, the service receives a SIGKILL signal and then once stopped is considered failed:

```

Stopping charon_pluto.service at 02-Jul-2015 15:10:11 ←
STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:10:25
Number of CPUs: 3 - Memory(free/tot): 1,659,176kB / 3,868,776kB (42%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  FAILED     Not found    N
  Description: CHARON as4100/pluto
  Stopped: Thu 2015-07-02 15:10:23 CEST (Result: signal/KILL)

Available options
-----
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): █
    
```

Example2 - Guest start

Context: Red Hat Enterprise Linux 7.1 server with CHARON-AXP V4.6 installed, as4100/pluto guest stopped/failed (see above)

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:18:25
Number of CPUs: 3 - Memory(free/tot): 1,659,180kB / 3,868,776kB (42%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  FAILED     Customized   N
  Description: CHARON as4100/pluto
  Stopped: Thu 2015-07-02 15:10:23 CEST (Result: signal/KILL)

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): 2 1

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:18:30
Number of CPUs: 3 - Memory(free/tot): 1,659,128kB / 3,868,776kB (42%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto           1 256M  FAILED     Customized   N
  Description: CHARON as4100/pluto
  Stopped: Thu 2015-07-02 15:10:23 CEST (Result: signal/KILL)

Please confirm you want to start as4100/pluto.cfg (y/n) : y 2

```

We can optionally have a continuous view of the log file:

```
Starting charon_pluto.service at 02-Jul-2015 15:20:02
Do you want to view the log file (y/n) ? y
Continuous view of /charon/pluto.log
Press CTRL-C to stop (it is recommended to enlarge screen to 132 cols minimum)
20150702:152008:INFO :0:000003A5:hexane.cxx(5357): session is loading built-in
configuration "AlphaServer_4100"...
20150702:152008:INFO :0:000003A6:hexane.cxx(5381): session has finished loading
built-in configuration "AlphaServer_4100".
20150702:152008:INFO :0:000003AA:hexane.cxx(5470): session is loading configura
tion file "/charon/pluto.cfg"...
20150702:152008:INFO :0:000003AB:hexane.cxx(5500): session has finished loading
configuration file "/charon/pluto.cfg".
20150702:152008:INFO :0:0000032B:hexane.cxx(2588): Start request received.
20150702:152009:INFO :0:000003AC:hexane.cxx(1283): session's process affinity i
s 0000000000000007, system affinity is 0000000000000007.
20150702:152009:INFO :0:000003D1:hexane.cxx(1537): session's I/O domain affinit
y is 0000000000000001, CPU domain affinity is 0000000000000006
20150702:152009:INFO :0:000003BA:ll_sentine( 750): Looking for a license key ..
.
20150702:152011:INFO :0:000003DC:ll_sentine( 845): ... found license key 879642
840.
20150702:152012:INFO :0:0000024D:hexane.cxx(2729): STROMASYS SA, (C) 2009-2015
20150702:152012:INFO :0:00000350:hexane.cxx(2775): CHARON-AXP/4100 (AlphaServer
4100), V 4.6 B 16804, May 26 2015 / 1002922 / 879642840
20150702:152012:INFO :0:00000336:hexane.cxx(2802): The end user of this softwar
e has agreed to STROMASYS' Terms and Conditions for Software License and Limited
Warranty, as described at: http://www.stromasys.com/pub/doc/30-17-033.pdf
20150702:152012:INFO :0:0000009D:hexane.cxx(2879): License info:
CHARON product code: "CHAXP-806xx-xI".
Licensed to: "Stromasys SA".
Date limited license, limited to: 5/Nov/2015 00:55:00.
Warning: setting the host system date back will permanently invalidate the licen
se key.
```

Press **CTRL-C** at any time to leave the log file view.

Example3 - Guest stop with stop script defined

Context: Red Hat Enterprise Linux 7.1 server with CHARON-AXP V4.6 installed, as4100/pluto guest running. Stop script created and customized based on the example provided with the "expect" utility (see [Service management - Create/Edit guest stop script](#)) and the expect script example provided in the kit.

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:21:29
Number of CPUs: 3 - Memory(free/tot): 147,660kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  ACTIVE     Customized   N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 15:20:08 CEST (PID=40882)

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): 2 1

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:25:05
Number of CPUs: 3 - Memory(free/tot): 146,252kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto           1 256M  ACTIVE     Customized   N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 15:20:08 CEST (PID=40882)

Please confirm you want to stop as4100/pluto.cfg (y/n) : y 2

Stopping charon_pluto.service at 02-Jul-2015 15:25:07

```

We can see below the guest has been properly stopped and is now in INACTIVE / REQUESTED state:

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:25:20
Number of CPUs: 3 - Memory(free/tot): 1,680,716kB / 3,868,776kB (43%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto           1 256M  INACTIVE  REQUESTED  Customized  N
  Description: CHARON as4100/pluto
  Stopped: Thu 2015-07-02 15:25:18 CEST (Result: success) ✓

Available options
-----
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): █

```

 As we are running Red Hat Enterprise Linux 7.1 server, `systemd` allows us to check the status of the service.

Use option 5 of the menu can help seeing the result of the shutdown commands:

```

5 - Manage 'systemd' services      q - quit

Enter your choice (enter to refresh): 5

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 15:27:08
Number of CPUs: 3 - Memory(free/tot): 1,687,860kB / 3,868,776kB (43%)

Emulator/Config File      Cpu Mem State      Stop script      B
-----
1- as4100/pluto           1 256M INACTIVE  REQUESTED  Customized      N
  Description: CHARON as4100/pluto
  Stopped: Thu 2015-07-02 15:25:18 CEST (Result: success)

charon_pluto.service status
charon_pluto.service - CHARON as4100/pluto
  Loaded: loaded (/etc/systemd/system/charon_pluto.service; disabled)
  Active: inactive (dead) since Thu 2015-07-02 15:25:18 CEST; 1min 50s ago
  Process: 46285 ExecStop=/opt/charon/utills/charon_gstart stop /charon/pluto.cfg
  (code=exited, status=0/SUCCESS)
  Process: 40673 ExecStart=/opt/charon/utills/charon_gstart start /charon/pluto.c
  fg (code=exited, status=0/SUCCESS)
  Main PID: 40882 (code=exited, status=0/SUCCESS)

Jul 02 15:25:07 rhel71.localdomain charon_gstart[46285]: [INFO ] Executing stop
script. Emulator pid is 40882.
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: %EXPECT-I-BEGIN, Starti
ng / UNIX... [2015-07-02 15:25:07]
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: %EXPECT-I-SNDRET, Sendi
ng carriage return... [2015-07-02 15:25:07]
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: %EXPECT-I-FOUND, Found
SRM prompt [2015-07-02 15:25:07]
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: %EXPECT-I-POWEROFF, Sen
ding power off... [2015-07-02 15:25:07]
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: %EXPECT-S-POWEROFF, pow
er off completed. [2015-07-02 15:25:09]
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: %EXPECT-I-END, Exited w
ith code 0. [2015-07-02 15:25:11]
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: [INFO ] Success.
Jul 02 15:25:11 rhel71.localdomain charon_gstart[46285]: [INFO ] Process id 4088
2 has terminated
Jul 02 15:25:18 rhel71.localdomain systemd[1]: Stopped CHARON as4100/pluto.

Do you want to edit the .service file (y/n) ?

```

i We can see above, the `expect` utility has been used, did connect to the console, found the SRM prompt (the as4100 was not booted) and then issued a "power off" command (⚠️ This depends of what you decide to display in the guest stop script)

? With Linux systems not using `systemd` (Red Hat Enterprise Linux 6), we would have to look into a log file defined in the stop script / output redirection. For more information, see [Service management - Create/Edit guest stop script](#)


Service management - View guest log file


Table of Contents

- Description
- Examples
 - Example1 - Continuous view
 - Example2 - Log edition


Description

Using this option you can either edit the log files using a selected text editor or have a continuous view ("live") of the log file for the selected guest.

 Rotating log files are not supported.

 Log files are automatically archived, whatever the log_method parameter is set in the configuration file, at guest start so a new one is created each time.

The logs are kept for 60 days by default. See "Manage recursive jobs: license expiration check, log events (cron)" to change settings.

 When using the log file edition, only 16 most recent ones are displayed in the list. To get older files, you will need to find them in the log file folder with name identical to the defined log file and with extension ".upto<YYYY-MM-DD-HHMNSE>" (example: /charon/pluto.log.upto2015-07-02-172824)

Example:

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 16:03:17
Number of CPUs: 3 - Memory(free/tot): 1,694,680kB / 3,868,776kB (43%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  INACTIVE  REQUESTED  Customized  N
  Description: CHARON as4100/pluto
  Stopped: Thu 2015-07-02 15:25:18 CEST (Result: success)

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): 3
Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 17:17:41
Number of CPUs: 3 - Memory(free/tot): 1,671,820kB / 3,868,776kB (43%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto            1 256M  INACTIVE  REQUESTED  Customized  N
  Description: CHARON as4100/pluto
  Stopped: Thu 2015-07-02 15:25:18 CEST (Result: success)

Found definition of log file: /charon/pluto.log

Do you want a continuous view (1) or an editor view (2) (q to quit) ? █

```

Examples

Example1 - Continuous view

We can see below at point:

1. The tool displays the latest 12 lines of the current log file: in this case the guest was in stopped state.
2. The log file became inaccessible. Reason if we started the guest: the current log file was then archived and a new one is created
3. The continuous view continues with the newly detected log file

```

Continuous view of /charon/pluto.log
Press CTRL-C to stop (it is recommended to enlarge screen to 132 cols minimum)

20150702:152016:INFO :0:0000034B:scsi_disk.( 566): PKA_0 is being set ONLINE
container = "/data/disks/pluto_tru64.vdisk"
20150702:152016:INFO :0:00000348:scsi_disk.( 554): PKA_0 is being set OFFLINE
20150702:152016:INFO :0:0000034B:scsi_disk.( 566): PKA_0 is being set ONLINE
container = "/data/disks/pluto_tru64.vdisk"
20150702:152506:INFO :0:000003E6:ll_sentine(1826): Performing regular license c
heck ...
20150702:152507:INFO :0:SERVICE STOP REQUEST
20150702:152508:INFO :0:000003D7:hexane.cxx(4973): All virtual CPUs of "AlphaSe
rver_4100" have been stopped by now.
20150702:152508:INFO :0:0000032D:hexane.cxx(2674): "AlphaServer 4100" stop requ
est received.
20150702:152508:INFO :0:0000014C:lnxpackpor( 416): EWA0: Stopping network inter
face ... please wait.
20150702:152509:INFO :0:000003DC:ll_sentine(1919): ... for license key 879642
840.
20150702:152509:INFO :0:0000032E:hexane.cxx(2692): Stopped.
tail: '/charon/pluto.log' has become inaccessible: No such file or directory
tail: '/charon/pluto.log' has appeared; following end of new file
20150702:172824:INFO :0:000003A5:hexane.cxx(5357): session is loading built-in
configuration "AlphaServer 4100"...
20150702:172824:INFO :0:000003A6:hexane.cxx(5381): session has finished loading
built-in configuration "AlphaServer 4100".
20150702:172824:INFO :0:000003AA:hexane.cxx(5470): session is loading configura
tion file "/charon/pluto.cfg"...
20150702:172824:INFO :0:000003AB:hexane.cxx(5500): session has finished loading
configuration file "/charon/pluto.cfg".
20150702:172824:INFO :0:0000032B:hexane.cxx(2588): Start request received.
20150702:172825:INFO :0:000003AC:hexane.cxx(1283): session's process affinity is
0000000000000007, system affinity is 0000000000000007.
20150702:172825:INFO :0:000003D1:hexane.cxx(1537): session's I/O domain affinit
y is 0000000000000001, CPU domain affinity is 0000000000000006
20150702:172825:INFO :0:000003BA:ll_sentine( 750): Looking for a license key ..
.
20150702:172828:INFO :0:000003DC:ll_sentine( 845): ... found license key 879642
840.
20150702:172828:INFO :0:0000024D:hexane.cxx(2729): STROMASYS SA, (C) 2009-2015
20150702:172828:INFO :0:00000350:hexane.cxx(2775): CHARON-AXP/4100 (AlphaServer
4100), V 4.6 B 16804, May 26 2015 / 1002922 / 879642840
20150702:172828:INFO :0:00000336:hexane.cxx(2802): The end user of this softwar

```

Example2 - Log edition

Select editor view (1) then the log file (2) and finally the editor (3):

```

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- as4100/pluto          1 256M  ACTIVE      Customized   N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 17:28:24 CEST (PID=61983)

Found definition of log file: /charon/pluto.log

Do you want a continuous view (1) or an editor view (2) (q to quit) ? 2
Log files found (most recent ones):

No  From                To                Size      Lines
---  ---                ---                ---      ---
1  Thu 02-Jul-2015 13:29:31  Thu 02-Jul-2015 13:29:33      0         0
2  Thu 02-Jul-2015 13:29:33  Thu 02-Jul-2015 14:40:43   5,741      61
3  Thu 02-Jul-2015 14:40:43  Thu 02-Jul-2015 15:20:08   5,045      53
4  Thu 02-Jul-2015 15:20:08  Thu 02-Jul-2015 17:28:24   4,549      47
5  Thu 02-Jul-2015 17:28:24  <NOW>                3,836      41

Select the log file you want to view (q to quit, r to refresh): 5
File selected: /charon/pluto.log

Available editors
g - gedit (windows notepad like)
e - emacs (windows notepad like, advanced)
n - nano  (basic text editor)
v - vi   (advanced users standard text editor)
m - vim  (advanced users improved text editor)
q - quit
Select the editor you want to use: m

```

Notes:

- 'From' date is either based on first event line including a date found in the log file or on file creation time
- 'To' date is based on time the file was archived (renamed before guest start)

Service management - View guest manager log file

Description

This option is mainly used for debugging, it displays the log file of the service manager (start & stop sequences initiated, checks, etc...)

Example:

```

STROMASYS - Virtualization Technologies V2.0d
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Thu 18-Jun-2015 15:58:00 - Current: Thu 02-Jul-2015 17:32:40
Number of CPUs: 3 - Memory(free/tot): 151,580kB / 3,868,776kB (3%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  ACTIVE    Customized   N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-02 17:28:24 CEST (PID=61983)

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): 4 1

Log files found (most recent ones):

No  From              To              Size      Lines
---  -
  1  Thu 18-Jun-2015 12:18:12  <NOW>        19,003    249

Select the log file you want to view (q to quit, r to refresh): 1 2

File selected: /opt/charon/log/charon_gstart.log

Available editors
g - gedit (windows notepad like)
e - emacs (windows notepad like, advanced)
n - nano (basic text editor)
v - vi (advanced users standard text editor)
m - vim (advanced users improved text editor)
q - quit
Select the editor you want to use: m 3

```

Log example:

```
20150702;144033;STARTING;/charon/pluto.cfg
20150702;144033;STARTING;/charon/pluto.cfg;INFO;Checking license presence
20150702;144043;STARTING;/charon/pluto.cfg;INFO;Checking network settings
20150702;144043;STARTING;/charon/pluto.cfg;INFO;Renaming log file /charon/pluto.log to
/charon/pluto.log.upto2015-07-02-144043
20150702;144043;STARTING;/charon/pluto.cfg;INFO;Starting emulator: /opt/charon/bin/as4100 -d
/charon/pluto.cfg
20150702;151011;5:STOP:/charon/pluto.cfg
20150702;151011;5:STOP_COMMAND;/charon/pluto.cfg;NO STOP SCRIPT KILL 24188
20150702;151011;5:STOP_COMMAND:RETRY 1
20150702;151016;5:STOP_COMMAND:SUCCESS
20150702;152002;STARTING;/charon/pluto.cfg
20150702;152002;STARTING;/charon/pluto.cfg;INFO;Checking license presence
20150702;152007;STARTING;/charon/pluto.cfg;INFO;Checking network settings
20150702;152008;STARTING;/charon/pluto.cfg;INFO;Renaming log file /charon/pluto.log to
/charon/pluto.log.upto2015-07-02-152008
20150702;152008;STARTING;/charon/pluto.cfg;INFO;Starting emulator: /opt/charon/bin/as4100 -d
/charon/pluto.cfg
20150702;152507;5:STOP:/charon/pluto.cfg
20150702;152507;5:STOP_COMMAND:/charon/pluto.cfg
20150702;152511;5:STOP_COMMAND:returned 0
20150702;152511;5:STOP_COMMAND:SUCCESS
20150702;172818;STARTING;/charon/pluto.cfg
20150702;172818;STARTING;/charon/pluto.cfg;INFO;Checking license presence
20150702;172824;STARTING;/charon/pluto.cfg;INFO;Checking network settings
20150702;172824;STARTING;/charon/pluto.cfg;INFO;Renaming log file /charon/pluto.log to
/charon/pluto.log.upto2015-07-02-172824
20150702;172824;STARTING;/charon/pluto.cfg;INFO;Starting emulator: /opt/charon/bin/as4100 -d
/charon/pluto.cfg
```



Service management - Install or update service

Table of Contents

- Description
- Examples
 - Red Hat Enterprise Linux 6 server
 - Red Hat Enterprise Linux 7 server (using systemd)

Description

Depending on Linux distribution and version, this option will have different names and functions:

Red Hat 6	<p>Option name: Install or update service</p> <p>Allows you to install (after fresh install) or update guests management service (kit upgrade).</p> <p> Service update does not require guests shutdown & restart</p>
Red Hat 7+ and Fedora	<p>Option name: Manage 'systemd' services</p> <p>Allows you to view the service status and update the service configuration file (to add dependencies, description, etc...)</p> <p> Be extremely cautious when updating the file. Preferably limit updates to <code>Description=</code>, <code>After=</code>, <code>Before=</code>, <code>Wants=</code> parameters</p>

Examples

Red Hat Enterprise Linux 6 server

Below, an alert is displayed telling the service must be reinstalled (after kit upgrade):

```

STROMASYS - Virtualization Technologies V2.1a
Service management (Start, Stop, Manage automatic boot & shutdown)

New version found, please update service!
Server booted on: Mon 06-Jul-2015 17:33:00 - Current: Thu 09-Jul-2015 16:22:54
Number of CPUs: 3 - Memory(free/tot): 3,238,000kB / 8,053,848kB (40%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- as4100/pluto            1 256M  RUNNING   Customized   N
  Started: Thu 09-Jul-2015 16:21:23
- mv3k198/myvax          1 128M  RUNNING   Customized   Y
  Started: Thu 09-Jul-2015 16:21:40

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Install or update service q - quit

Enter your choice (enter to refresh):
    
```

In this case, the current version 2.2c will be replaced by the 2.2d:

```

Enter your choice (enter to refresh): 5
Current: script version in init.d is 2.2c
New:      script version in /utils is 2.2d
Do you want to copy from /utils to init.d (y/n) ? y
Copying file from /utils to init.d ...
Copied.
Installing service 'charon_gstart' ...
Done.
Press enter
    
```

Red Hat Enterprise Linux 7 server (using systemd)

```

STROMASYS - Virtualization Technologies V2.1a
Service management (Start, Stop, Manage automatic boot & shutdown)

Server booted on: Wed 08-Jul-2015 15:38:00 - Current: Thu 09-Jul-2015 16:39:17
Number of CPUs: 3 - Memory(free/tot): 174,564kB / 3,868,776kB (4%)

Emulator/Config File      Cpu Mem State      Stop script  B
-----
- as4100/pluto            1 256M ACTIVE      Customized   N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-09 16:27:54 CEST (PID=94500)
- mv3k198/mvax3198       1 128M INACTIVE   REQUESTED   Customized   N
  Description: CHARON mv3k198/mvax3198
  Stopped: Not started at server boot

Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): 5
    
```

```

Server booted on: Wed 08-Jul-2015 15:38:00 - Current: Thu 09-Jul-2015 16:40:43
Number of CPUs: 3 - Memory(free/tot): 186,080kB / 3,868,776kB (4%)

Emulator/Config File      Cpu Mem State      Stop script  B
-----
1- as4100/pluto            1 256M ACTIVE      Customized   N
  Description: CHARON as4100/pluto
  Started: Thu 2015-07-09 16:27:54 CEST (PID=94500)
2- mv3k198/mvax3198       1 128M INACTIVE   REQUESTED   Customized   N
  Description: CHARON mv3k198/mvax3198
  Stopped: Not started at server boot

Select the guest you want to see service state (q to quit, enter to refresh): 1
    
```

First, we'll see the service status (1 above). We can see below the service is active and the startup sequence detected an anomaly: the virtual disk /data/disks/pluto_inex.vdisk defined in the configuration file does not exist or is empty:


```

charon_pluto.service status
charon_pluto.service - CHARON as4100/pluto
  Loaded: loaded (/etc/systemd/system/charon_pluto.service; disabled)
  Active: active (running) ✓ since Thu 2015-07-09 16:27:54 CEST; 13min ago
  Process: 94328 ExecStart=/opt/charon/utils/charon_gstart start /charon/pluto.c
fg (code=exited, status=0/SUCCESS)
  Main PID: 94500 (AlphaServer_410)
  CGroup: /system.slice/charon_pluto.service
          └─94500 /opt/charon/bin/as4100 -d /charon/pluto.cfg

Jul 09 16:27:48 rhel71.localdomain systemd[1]: Starting CHARON as4100/pluto...
Jul 09 16:27:48 rhel71.localdomain charon_gstart[94328]: [INFO ] aksusbd monitor
service status is: active
Jul 09 16:27:48 rhel71.localdomain charon_gstart[94328]: [INFO ] Log monitor ser
vice status is: active
Jul 09 16:27:54 rhel71.localdomain charon_gstart[94328]: [INFO ] License found.
Jul 09 16:27:54 rhel71.localdomain charon_gstart[94328]: [INFO ] Checking network
settings...
Jul 09 16:27:54 rhel71.localdomain charon_gstart[94328]: [INFO ] Checking vdisk
files if any...
Jul 09 16:27:54 rhel71.localdomain charon_gstart[94328]: [ERROR] /data/disks/plu
to_inex.vdisk: file does not exist or is empty ✗
Jul 09 16:27:54 rhel71.localdomain charon_gstart[94328]: [INFO ] Starting emulat
or: /opt/charon/bin/as4100 -d /charon/pluto.cfg
Jul 09 16:27:54 rhel71.localdomain systemd[1]: Started CHARON as4100/pluto.

Do you want to edit the .service file (y/n) ? y

```

Now, we're going to update the default service description, here "CHARON as4100/pluto", using the "vim" editor:

```

[Unit]
Description=DEMO as4100 pluto ←
After=charon_logmon_pluto.service atd.service postfix.service ncu.service aksusbd.service
Wants=aksusbd.service

[Service]
Type=forking
WorkingDirectory=/opt/charon/log
ExecStart=/opt/charon/utils/charon_gstart start /charon/pluto.cfg
ExecStop=/opt/charon/utils/charon_gstart stop /charon/pluto.cfg

[Install]
WantedBy=multi-user.target

```

Result:

```

Reloading systemd manager configuration...
Server booted on: Wed 08-Jul-2015 15:38:00 - Current: Thu 09-Jul-2015 16:44:13
Number of CPUs: 3 - Memory(free/tot): 183,512kB / 3,868,776kB (4%)

Emulator/Config File          Cpu Mem State          Stop script  B
-----
1- as4100/pluto                1 256M ACTIVE              Customized  N
   Description: DEMO as4100 pluto ✓
   Started: Thu 2015-07-09 16:27:54 CEST (PID=94500)
2- mv3k198/mvax3198            1 128M INACTIVE REQUESTED          Customized  N
   Description: CHARON mv3k198/mvax3198
   Stopped: Not started at server boot

Select the guest you want to see service state (q to quit, enter to refresh):

```


Service management - Create/Edit guest stop script

Table of Contents

- Description
- Explanation on the example file
 - Example with SSH
 - Example with Expect tool, Tru64 guest
 - Example with Expect tool, Tru64 guest, variant for systemd
 - Example with Expect tool, AXP VMS guest
 - Example with Expect tool, VAX VMS guest
- Optional guest display status script


Description



This option will allow you to edit the stop script that will be executed at service shutdown. The script is unique and uses the configuration file (full name) to select commands to be executed at guest shutdown.


If the script does not exist, it will be generated automatically based on existing guests and will by default do nothing. Note that guests added after script creation will have to be inserted manually.

You will have either to add your own shutdown scripts or to get examples provided in the "`charon_gstart.stop.example`" script located in the "`/opt/charon/utils`" folder.

Examples are provided for clean shutdown using "ssh" or "expect" thanks to the "`guest_shutdown.exp`" script given as an example. See [Tips and Tricks - Shutdown guests with Expect tool](#) for more.

 "ssh" will require a trust to be created between the Linux server and the Tru64 or OpenVMS guest.

 "expect" will require you pass user and password to the script to enable it to connect to the OPA0 console and execute the shutdown commands. The "`guest_shutdown.exp`" script can perform operations to log off user connected on the console (if the prompt is detected), enter a username/password to login (if "login:" or "username:" is detected), execute the shutdown command (if the prompt is detected) and detect the SRM prompt (>>>) to issue the "power off" command (AXP) or send the F6 key (VAX) if enabled. Note any local existing connection to the console will be killed before executing the expect script.  If the console is locked from an external connection or if the prompt is not detected after sending a carriage return, the expect script will fail.

 When editing this script (`/opt/charon/utils/charon_gstart.stop`) you will be proposed to edit the example file at the same time to facilitate copy/paste operations if needed.

Explanation on the example file

Example with SSH

 Example below is for Tru64. The only difference with OpenVMS is the username and shutdown command to be passed

You will have to create an `ssh` trust between the CHARON Linux server and the Tru64 guest in order to use this option.

- Update the configuration file name
- Replace the existing hostname "pluto" with your Tru64 guest hostname

```

=====
# Example with SSH, Tru64 guest
=====
/opt/charon/cfg/pluto.cfg)
1 ssh -o ConnectTimeout=2(pluto date >/dev/null 2>&1
  if test $? = 0
  then
2 ssh pluto "/sbin/shutdown -h now" >>/opt/charon/log/console.`basename $1|sed "s=\.cfg==g"`.log 2>&1
  sleep 5 3
  while test 1
  do
4 ping -c2(pluto >/dev/null 2>&1
  #----- break if the system is no more responding
  test $? = 0 || break
  sleep 5
  done
  sleep 5
fi

#----- Killing the emulator
PID=`ps -ef|grep "$2 -d $1"|grep -v grep|awk '{print $2}'`
5 test -n "${PID}" && kill -9 ${PID}

#----- Logging the emulator stopped in the log file
get_logfile $1
6 echo "`date +%Y%m%d:%H%M%S`:INFO :0:Emulator stopped at `date`" >>${LOGF}
;;

```

Principle

1. Check the guest can be accessed via "ssh" (adapt the ConnectTimeout to your needs)
2. Issue the shutdown command
3. Wait a few seconds
4. Check if the guest can be "pinged" and repeat with an interval of 5 seconds. If the guest cannot be pinged, assume the shutdown procedure is complete
5. Kill the emulator process (the shutdown commands does not power off nor stop the emulator process)
6. Report the stop information within the guest log file

Example with Expect tool, Tru64 guest

You will have here to replace the user (1), password (2) and shell prompt (3) with the ones corresponding to your guest (shell prompt is used to determine if a user is logged on the console)

```

=====
# Example with Expect tool, Tru64 guest
=====
/opt/charon/cfg/tru64example.cfg)|
#-----
# Killing active connection to console if any
#-----
1 CHK=`grep -v ^# $1 | grep -w load | grep -w virtual_serial_line | grep OPA`
PORT=`echo ${CHK} | sed "s:\(^.*port=\)\(.*\):\\2:g"`
PID=`ps -ef|grep telnet|grep localhost|grep $PORT|grep -v script|awk '{print \\$2}'`
test -n "${PID}" && kill -9 ${PID}

#--- Executing the expect script:
#---- * no need to stop the emulator because 1 power off 3 done cleanly with expect
#
2 /opt/charon/utils/guest_shutdown.exp ${PORT} root charon "# " (UNIX) >>/opt/charon/log/console.`basename $1|sed "s=\.cfg==g"`.log 2>&1
;;

```

Principle

1. Check if there's an active connection to the console on the local host, kill if any.
Reminder: ⚠ If the console is locked from an external connection or if the prompt is not detected after sending a carriage return, the expect script will fail.
2. Execute the "expect" script and report all output to /opt/charon/console.<guest name>.log. No need to kill the emulator process here as the "power off" command is executed.

Example with Expect tool, Tru64 guest, variant for systemd

This example is quite the same as the one above except the "expect" script messages will be made available to the service status.

You will have here to replace the user (1), password (2) and shell prompt (3) with the ones corresponding to your guest (shell prompt is used to determine if a user is logged on the console)

```

=====
# Example with Expect tool, Tru64 guest, variant for systemd
=====
/opt/charon/cfg/tru64systemd.cfg) ←
#
# Killing active connection to console if any
#
CHK=`grep -v ^# $1 | grep -w load | grep -w virtual_serial_line | grep OPA`
PORT=`echo ${CHK} | sed "s:(^.*port=)\(..*$):\2:g"`
PID=`ps -ef|grep telnet|grep localhost|grep $PORT|grep -v script|awk '{print $2}'`
test -n "${PID}" && kill -9 ${PID}

#--- Executing the expect script:
#---- * no need to stop the emulator because 1 2 3 done cleanly with expect
#
1 /opt/charon/utils/guest_shutdown.exp ${PORT} root charon "# " UNIX=>/opt/charon/log/`basename $1|sed "s=\.cfg=g"`.expect.log 2>&1
RET=?
2 cat /opt/charon/log/`basename $1|sed "s=\.cfg=g"`.expect.log >>/opt/charon/log/console.`basename $1|sed "s=\.cfg=g"`.log
#---- * displaying EXPECT script messages to default output so that
#      results will be available using the "systemctl -l status charon_..."
#      command
3 grep "%EXPECT-" /opt/charon/log/`basename $1|sed "s=\.cfg=g"`.expect.log
exit ${RET}
;;

```

Principle

1. Check if there's an active connection to the console on the local host, kill if any.
Reminder: ⚠ If the console is locked from an external connection or if the prompt is not detected after sending a carriage return, the expect script will fail.
2. Execute the "expect" script (1) and report all output to `/opt/charon/<guest name>.expect.log`. No need to kill the emulator process here as the "power off" command is executed.
3. Append the output of this file to (2) the `/opt/charon/console.<guest name>.log` file for history
4. Search for the "expect" script messages and displays them in `stdout` (3), they will be logged in the service status.

Example:

```

charon pluto.service status
charon_pluto.service - DEMO as4100 pluto
  Loaded: loaded (/etc/systemd/system/charon_pluto.service; disabled)
  Active: inactive (dead) since Thu 2015-07-09 16:45:24 CEST; 1h 17min ago
  Main PID: 94500 (code=exited, status=0/SUCCESS)
  CGroup: /system.slice/charon_pluto.service

Jul 09 16:45:14 rhel71.localdomain charon_gstart[106959]: [INFO ] Executing stop
script. Emulator pid is 94500.
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: %EXPECT-I-BEGIN, Start
ing / UNIX... [2015-07-09 16:45:14]
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: %EXPECT-I-SNDRET, Send
ing carriage return... [2015-07-09 16:45:14]
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: %EXPECT-I-FOUND, Found
SRM prompt [2015-07-09 16:45:14]
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: %EXPECT-I-POWEROFF, Se
nding power off... [2015-07-09 16:45:14]
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: %EXPECT-S-POWEROFF, po
wer off completed. [2015-07-09 16:45:15]
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: %EXPECT-I-END, Exited
with code 0. [2015-07-09 16:45:17]
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: [INFO ] Success.
Jul 09 16:45:17 rhel71.localdomain charon_gstart[106959]: [INFO ] Process id 945
00 has terminated
Jul 09 16:45:24 rhel71.localdomain systemd[1]: Stopped DEMO as4100 pluto.

```

Example with Expect tool, AXP VMS guest

You will have here to replace the user (1), password (2) and shell prompt (3) with the ones corresponding to your guest (shell prompt is used to determine if a user is logged on the console)

```

=====
# Example with Expect tool, AXP VMS guest
=====
/opt/charon/cfg/kerberos.cfg)
#-----
# Killing active connection to console if any
#-----
1 CHK='grep -v ^# $1 | grep -w load | grep -w virtual_serial_line | grep OPA`
PORT='echo ${CHK} | sed "s:\(^.*port=\)\(.*$\):\2:g"'
PID='ps -ef|grep telnet|grep localhost|grep $PORT|grep -v script|awk '{print \$2}'`
test -n "${PID}" && kill -9 ${PID}

#--- Executing the expect script:
#---- * no need to stop the emulator because the power off is done cleanly with expect
#
2 *** Update username/password below ***
/opt/charon/utis/guest_shutdown.exp ${PORT} system charon0 "> " VMS >>/opt/charon/log/console.`basename $1|sed "s=\.cfg==g".log 2>&1
;;

```

Principle

1. Check if there's an active connection to the console on the local host, kill if any.
Reminder: ⚠ If the console is locked from an external connection or if the prompt is not detected after sending a carriage return, the expect script will fail.
2. Execute the "expect" script and report all output to `/opt/charon/console.<guest name>.log`. No need to kill the emulator process here as the "power off" command is executed.

Example with Expect tool, VAX VMS guest

You will have here to replace the user (1), password (2) and shell prompt (3) with the ones corresponding to your guest (shell prompt is used to determine if a user is logged on the console)

i The F6 key can be enabled or not in the configuration file. The expect script will send it if the "power off" command fails and if this operation fails, it will exit with return code 9 meaning the emulator process will have to be killed.

```

=====
# Example with Expect tool, VAX VMS guest
=====
/opt/charon/cfg/mymv3k198.cfg)
#-----
# Killing active connection to console if any
#-----
1 CHK='grep -v ^# $1 | grep -w load | grep -w virtual_serial_line | grep OPA`
PORT='echo ${CHK} | sed "s:\(^.*port=\)\(.*$\):~2:g"'
PID='ps -ef|grep telnet|grep localhost|grep $PORT|grep -v script|awk '{print \$2}'`
test -n "${PID}" && kill -9 ${PID}

#--- Executing the expect script:
#
# *** Update username/password below ***
2 /opt/charon/utis/guest_shutdown.exp ${PORT} system charon0 "> " VMS >>/opt/charon/log/console.`basename $1|sed "s=\.cfg==g".log 2>&1
if test $? = 9
then
3 #----- Killing the emulator if stop_on=F6 is not set (no 'power off' command for VAX)
PID='ps -ef|grep "$2 -d $1"|grep -v grep|awk '{print $2}'`
test -n "${PID}" && kill -9 ${PID}
fi

#----- Logging the emulator stopped in the log file
get_logfile $1
4 echo " date +%Y%m%d:%H%M%S` :INFO :0:Emulator stopped at `date` " >>${LOGF}
;;

```

Principle

1. Check if there's an active connection to the console on the local host, kill if any.
Reminder: ⚠ If the console is locked from an external connection or if the prompt is not detected after sending a carriage return, the expect script will fail.
2. Execute the "expect" script and report all output to `/opt/charon/console.<guest name>.log`. VAX systems have no "power off" command so the F6 key will be sent.
3. If the "expect" script returns the error code 9, this means the F6 key is not defined in the configuration and then the emulator process must be killed
4. Report the stop information within the guest log file

Optional guest display status script

It is possible to create a script, "/opt/charon/utlis/charon_gstart.chkrun" (an example is provided in the 'charon_gstart.chkrun.example' file) that will add a status line while displaying the guests list. This script, if needed, has to be created manually and must be executable.

This status line is the result of the command you executed for that guest, for example a ping, an ssh command displaying uptime (Tru64) or boottime (OpenVMS).

Display output example:

```

STROMASYS - Virtualization Technologies V2.2
Service management (Start, Stop, Manage automatic boot & shutdown)


Server booted on: Mon 27-Jul-2015 18:34:00 - Current: Tue 18-Aug-2015 16:03:28
Number of CPUs: 8 - Memory(free/tot): 1,512,348kB / 8,011,116kB (18%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
- vx4k106/mvax4106        1 128M  INACTIVE  REQUESTED  Customized  N
  Description: Microvax 4000-106 DEMO
  Stopped: Mon 2015-08-17 14:55:16 CEST (Result: success)
- ds20/myds20             2 512M  ACTIVE    Customized  Y
  Description: Alphaserver DS20 DEMO
  Started: Fri 2015-08-14 15:16:04 CEST (PID=26514)
  Guest OS response: 16:02 up 4 days myds20 V5.1 ←
Available options
1 - Update guests list          6 - Create/Edit guest stop script
2 - Start/stop guests          7 - Connect to guest console
3 - View latest guest log file  8 - Edit configuration files
4 - View guest manager log file 9 - Manage monitored guests logs
5 - Manage 'systemd' services   q - quit

Enter your choice (enter to refresh): █

```

Script example:

 In this example, we'll use "ssh" to display the guest "uptime" and the result of the "uname -nr" command (name of the node + release number of the operating system)

```

# touch /opt/charon/utils/charon_gstart.chkrun
# chmod 744 /opt/charon/utils/charon_gstart.chkrun
# vim /opt/charon/utils/charon_gstart.chkrun

#!/bin/sh
#
# Parameter $1: contains full path to cfg file
#
case "$1"
in
  /charon/myds20.cfg)
    ssh -o ConnectTimeout=2 myds20 "uptime|cut -f1 -d',';uname -nr" 2>/dev/null
    RETVAL=$?
    ;;
  *)
    echo "Invalid parameter '$1'"
    RETVAL=1
    ;;
esac
echo "===RETVAL=${RETVAL}=="
exit ${RETVAL}

```

Example file provided (contains example for Tru64 and OpenVMS):

```

[root@rhel70 utils]# cat charon_gstart.chkrun.example
#!/bin/sh
#
# Parameter $1: contains full path to cfg file
#
case "$1"
in
  /opt/charon/cfg/pluto.cfg)
    ssh -o ConnectTimeout=2 pluto "uptime|cut -f1 -d','" 2>/dev/null
    RETVAL=$?
    ;;
  /opt/charon/cfg/vms.cfg)
    ssh -o ConnectTimeout=2 system@vms "write sys$output \"Booted 'f$getsyi(\"boottime\")\" \" 2>/dev/null
    RETVAL=$?
    ;;
  *)
    echo "Invalid parameter '$1'"
    RETVAL=1
    ;;
esac
echo "===RETVAL=${RETVAL}=="
exit ${RETVAL}

```

Diagram annotations: A green arrow labeled "Tru64" points to the "pluto" host name in the first ssh command. A green arrow labeled "OpenVMS" points to the "system@vms" host name in the second ssh command. A red oval highlights the "uptime|cut -f1 -d','" command in the first ssh command. A larger red oval highlights the "write sys\$output \"Booted 'f\$getsyi(\"boottime\")\" \" 2>/dev/null" command in the second ssh command.

Service management - Connect to guest console

Description

This option is also available from the main menu.

Please follow this link: [Connect to guest console](#)

Service management - Edit configuration files

Description

This option is also available from the main menu.

Please follow this link: [Edit configuration files](#)

Service management - Manage monitored guests logs

Description

This option is also available from the main menu.


Please follow this link: [Manage monitored guests logs](#)

Connect to guest console

Description



This option will allow you to connect to the guests consoles.

Notes:

-  "telnet" package must be installed
- The session will be recorded in a log file:
 - If 'set OPA0 log=' is found in the configuration file (not available with all CHARON products versions), the log will be stored in the temporary folder: '/tmp/console.<configuration file name shortened>.tmp.log' and will be overwritten for each session. It is just kept for information as the console log is managed by the CHARON emulator itself.
 - If there is no 'set OPA0 log=' line in the configuration file, the file will be located in '/opt/charon/log/console.<configuration file name shortened>.log'
- If 'stop_on' and/or 'break_on' features are enabled in the configuration file, this will be reminded before starting the telnet session
- To leave the telnet session, press the escape character which is by default **CTRL +]**. This character can be changed in the /root/.telnetrc file by defining the 'set escape' parameter:

Example:

```
# cat /root/.telnetrc
DEFAULT
mode char
set escape ^
#
```

-  Pressing the escape key will lead you to the 'telnet>' prompt. To leave the session, enter 'quit'
- If a connection to the console is active from the server, you will be prompted to kill the previous one.
- If a connection to the console is active from another location, it will be displayed but will not be killed. This will have to be done manually.
- Emulator termination check:
 - For CHARON-AXP, if the 'power off' command is detected (or shortened command), the guest STOP state will be set to REQUESTED
 - If the emulator is no more running when you leave the session, you will have to confirm that is requested or not
-  The console port number is displayed per guest. If a port number is used more than once, an alert will be displayed

Autoconnect feature

This feature has been implemented to prevent from buffer issues with old CHARON-AXP versions where a connection to the console had to be active for the guest not to be blocked (hang). This could prevent from booting the system.

Advantage of this feature is it will record console output for CHARON products versions that have not the console log feature implemented and activated: every 1 minute, a crontab job (/opt/charon/utils/charon_console_autoconnect) will check if a connection to the console is active or not. If not, a telnet session will be engaged in the background.

This feature can also be disabled from this menu and is automatically disabled for the guest that have console log recording with the 'set OPA0 log=' option.

Example

Connect to guest console main screen

```

STROMASYS - Virtualization Technologies V1.14
Connect to guest console

Server booted on: Mon 27-Jul-2015 18:34:00 - Current: Thu 30-Jul-2015 12:02:34
Number of CPUs: 8 - Memory(free/tot): 3,170,720kB / 8,011,116kB (39%)

Emulator/Config File          Cpu Mem State          Stop script  B
-----
1- vx4k106/mvax4106          1 128M ACTIVE             Customized   N
  Description: Microvax 4000-106 DEMO
  Started: Thu 2015-07-30 11:59:27 CEST (PID=23345)
  Port: 10003 -> CONSOLE LOCKED BY AUTOCONNECT UTILITY
2- ds20/myds20                2 512M ACTIVE             Customized   Y
  Description: Alphaserver DS20 DEMO
  Started: Thu 2015-07-30 11:59:02 CEST (PID=19391)
  Guest running / 12:02 up 2 mins myds20 V5.1
  Port: 10004
  Console log/configuration file: /consolelogs

a- Enable/disable console autoconnect feature (state is enabled)
v- View console log files

Choice ('q' to quit): █

```

We can see above:

- the console is already locked by the autoconnect utility for the "mvax4106" virtual machine because:
 - the autoconnect feature is enabled and
 - the configuration file does not contain any specification to the console log (no "set OPA0 log = ..." line)
- the console is free for "myds20" virtual machine because:
 - the configuration file contains a specification to the console log: "set OPA0 log = /consolelogs" (which corresponds to a folder)
 - no one is connected to the console

Connection to a virtual machine without console log defined in the configuration file

We will now connect to the "mvax4106" virtual machine console and kill the active session:

```
Choice ('q' to quit): 1
Console settings correctly set to:
load virtual_serial_line OPA0 port=10003

A local connection is already active on port 10003.

Do you want to abort current connection (y/n) ? y
To leave the console, press the escape character as shown below in the
line 'Escape character is...' and enter 'quit' at the 'telnet>' prompt.

Default escape character can be changed in the $HOME/.telnetrc file under the
machine or DEFAULT paragraph with the command: set escape <newchar>

WARNING The virtual machine can be powered off by pressing F6
Script started, file is /opt/charon/log/console.mvax4106.log
Trying ::1...
telnet: connect to address ::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'
>>>
```

i We can see above the F6 key is enabled in the configuration file and the telnet escape character has not been customized (set to default **CTRL +]**). We see also the session is recorded to the "/opt/charon/log/console.mvax4106.log" file (append mode).

Connection to a virtual machine with console log defined in the configuration file

Connection to the "myds20" virtual machine console:

```
Choice ('q' to quit): 2
Console settings correctly set to:
load virtual_serial_line OPA0 port=10004

To leave the console, press the escape character as shown below in the
line 'Escape character is...' and enter 'quit' at the 'telnet>' prompt.

Default escape character can be changed in the $HOME/.telnetrc file under the
machine or DEFAULT paragraph with the command: set escape <newchar>

WARNING The virtual machine can be powered off by pressing F6
Script started, file is /tmp/console.myds20.tmp.log
Trying ::1...
telnet: connect to address ::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.

STROMASYS LAB DEMO

Compaq Tru64 UNIX V5.1B (Rev. 2650) (myds20) console
login:
```





i We can see above, compared to the "mvax4106" console connection performed previously, the session is recorded to the "/tmp/console/myds20.tmp.log" file (overwrite mode), valid then only for this session because it will also be recorded by the emulator itself within the "/consolelogs" folder.

Edit configuration files

Description

This option will allow you to edit the configuration file(s).

Notes:

-  Changes will be applied on emulator restart
-  Some checks will be performed on network interface upon exit:
 - If virtual disk files (.vdisk) are used then their existence will be checked.
 - If the log file defined is a folder, an error message is displayed (currently not supported)
 -  If you change the log file name, you must remove the previous log monitoring service associated with this log file and recreate the service. See [Manage monitored guests logs](#)
 - If the network interface does not exist, an error message is displayed
 - If the network interface has an assigned IP address, an error message is displayed
 - If NM_CONTROLLED parameter is not set to "NO" in the Interface Configuration File (ifcfg-...), an error message is displayed
 - If ONBOOT parameter is not set to "NO" in the Interface Configuration File (ifcfg-...), an error message is displayed
-  All offload parameters will be switched off automatically at guest start.

Example

We will add several issues in the "myds20" virtual machine configuration file:

- the log file will be set to "/charon" which is a folder,
- the network interface "eth1" will be added whereas this interface does not exist,
- a virtual disk that does not exist will be added

```
STROMASYS - Virtualization Technologies V1.3f
Edit configuration files

Server booted on: Mon 27-Jul-2015 18:34:00 - Current: Thu 30-Jul-2015 13:59:17
Number of CPUs: 8 - Memory(free/tot): 3,187,524kB / 8,011,116kB (39%)

Emulator/Config File      Cpu Mem State      Stop script  B
-----
1- vx4k106/mvax4106      1 128M ACTIVE      Customized   N
  Description: Microvax 4000-106 DEMO
  Started: Thu 2015-07-30 11:59:27 CEST (PID=23345)
2- ds20/myds20           2 512M ACTIVE      Customized   Y
  Description: Alphaserver DS20 DEMO
  Started: Thu 2015-07-30 11:59:02 CEST (PID=19391)
  Guest running / 13:59 up 1:59 myds20 V5.1

Select the guest you want to edit the configuration file (q to quit): 2

Note: changes will be taken into account on service/guest restart

Available editors
g - gedit (windows notepad like)
n - nano (basic text editor)
v - vi (advanced users standard text editor)
m - vim (advanced users improved text editor)
Select the editor you want to use: m
```

When the editor will be closed, in our case 'vim', the checks will be performed:

```

STROMASYS - Virtualization Technologies V1.3f
Edit configuration files

Log file is set to: /charon

ERROR The log file is defined as a directory X
Rotating log files are not supported. Please correct file name asap!

Checking virtual disks (.vdisk) files...
- /data/disks/myds20_inexistent.vdisk: file does not exist or is empty X
Done.

Checking network interfaces...
Network interface eth1 for guest 'myds20': configuration issue found in ifcfg-eth1 file:
ERROR: Interface eth1 does not exist X

Notes: if you update the ifcfg file, the network service must be restarted
and the guest(s) must be powered off/on (a Linux server reboot is
recommended)

Press enter

```

After solving those issues, the following output is displayed:

```

STROMASYS - Virtualization Technologies V1.3f
Edit configuration files

Log file is set to: /charon/myds20.log ✓

Checking virtual disks (.vdisk) files... ✓
Done.

Checking network interfaces... ✓

Press enter

```

Manage monitored guests logs

Description

A service can be defined in order to monitor the guests log files to look for key removal messages (based on interval defined on the dongle) and/or informational, warning and error messages. It also monitors in parallel dongle removal (immediate mode).

The service works with a list of log files to be monitored.

 The log file name must be defined with full path within the configuration file. Rotating log files are not supported.

Management

This option offers the possibility to edit the log file list, start/stop monitoring for a guest, view the guest log file, view the monitoring log file, install or update log monitoring service for Linux servers without "systemd" feature (Red Hat 6) or to manage "systemd" services for Linux servers with "systemd" (Red Hat 7 and Fedora) and to start/restart the aksusbd log monitoring.

Example1 - Red Hat 6:

```

STROMASYS - Virtualization Technologies V2.0a
Manage monitored guests logs

Service status
aksusbd monitoring service is running ✓

Logs checked / Monitoring status
/opt/charon/log/pluto.log, running, last modified on Jul 9 16:26 ✓
/opt/charon/log/myvax.log, running, last modified on Jul 9 16:26 ✓

Available options
1 - Update log files list
2 - Start/stop monitoring log file
3 - View guest log files
4 - View monitoring log file
5 - Install or update service
6 - Start or Restart aksusbd log monitor
7 - Send/mail configuration and log files
q - quit

Enter your choice (enter to refresh): █

```


Example2 - Red Hat 7:

```

STROMASYS - Virtualization Technologies V2.0a
Manage monitored guests logs

Service status

aksusbd monitoring service is enabled, running ✓

Logs checked / Monitoring status

/charon/mvax4106.log, enabled, running, last modified on Jul 30 14:50 ✓
/charon/myds20.log, enabled, running, last modified on Jul 30 14:50 ✓



Available options

1 - Update log files list
2 - Start/stop monitoring log file
3 - View guest log files
4 - View monitoring log file
5 - Manage 'systemd' services
6 - Start or Restart aksusbd log monitor
7 - Send/mail configuration and log files
q - quit

Enter your choice (enter to refresh): █

```

Notes:

- The list of monitored log files is automatically filled with the log files found in the configuration files for guests defined with the [Service management \(Start, Stop, Manage automatic boot & shutdown\)](#) menu option when selecting the "Update log files list" option 1.
- The install/update service option will just restart the log monitoring service and not the guest.
- The aksusbd log monitoring will look into the "/var/log/messages" log file (Red Hat 6) or will check the journalctl (Red Hat 7 and Fedora) and will send an alert on dongle removal and dongle detected quite immediately
- The guest log monitoring:
 - will send alerts when information, warning and error messages will be detected depending on the alert level defined at [Alerts management - Select guests log alert level](#). Note alerts will be send in a bulk email message by default: one alert every 1 minute based on crontab entry settings for '/opt/charon/utills/charon_logevent' (see [Manage recursive jobs: license expiration check, log events \(cron\)](#))
 - It will also send alerts on guest start and clean stop
 - Dongle removal and detection alert messages will be sent based on license check interval defined with the license (default is 1 hour).
 - Each time a license is detected in the guest log file, an expiration check will occur and will send alerts if necessary
-  If you remove a guest from the "[Service management - Update guests list](#)" option, the log monitoring service will be removed from the list
- In case you're using regular (main) and backup license dongles, you will receive a "License dongle found" alert on dongle switch.
 -  If the alert tells you the license detected is a "Runtime limited license", you'll have to replace your regular dongle as soon as possible.

Send configuration and log files via mail

Description

This option offers the possibility to send configuration and log file from the select guest to an email recipient.

Notes:

- ★ Only for guests defined in the [Service management \(Start, Stop, Manage automatic boot & shutdown\)](#) menu option
- 💡 Do not send these files directly to our support team otherwise the sender will not be recognized by our ticketing tool: first send it to you then forward it to our support team
- ✔ The 3 most recent log files will be included in the email
- i Email subject will be "[CHARON] Configuration and log files for XXXX" where "XXXX" represents the shortened configuration file name (without extension).
- i Configuration and log files will be displayed within the message body and will also be attached to the email

Example

```

STROMASYS - Virtualization Technologies V1.3a
Send configuration and log files (3 latest ones) via mail

Server booted on: Mon 27-Jul-2015 18:34:00 - Current: Thu 30-Jul-2015 15:08:01
Number of CPUs: 8 - Memory(free/tot): 3,181,124kB / 8,011,116kB (39%)

Emulator/Config File      Cpu Mem  State      Stop script  B
-----
1- vx4k106/mvax4106      1 128M  ACTIVE     Customized   N
  Description: Microvax 4000-106 DEMO
  Started: Thu 2015-07-30 11:59:27 CEST (PID=23345)
2- ds20/myds20          2 512M  ACTIVE     Customized   Y
  Description: Alphaserver DS20 DEMO
  Started: Thu 2015-07-30 11:59:02 CEST (PID=19391)
  Guest running / 15:07 up 3:08 myds20 V5.1

Select the guest (q to quit): 2
Enter the email recipient (q to quit) [bruno.miretti@stromasys.com]:
Sending configuration and log files to bruno.miretti@stromasys.com...
Done.

Press enter

```

Below is an example of email received:

De root@rhel70.stromasys.net

Sujet **[CHARON] Configuration and log files for myds20**

Pour Bruno Miretti

Please find attached configuration and log files for myds20

Configuration file

```

set session hw_model = AlphaServer_DS20
#set session configuration_name = AlphaServer_DS20





set session log_method = append
#set session log_method = overwrite
set session log = /charon/myds20.log

#set session affinity="0, 1, 2, 3"
#set session n_of_io_cpus=1

set ace cpu_architecture = EV67
set com_dsnb[0] = 1040 custom_name = "AlphaServer_DS20E_67/667"

```

4 pièces jointes 111 Ko

 myds20.cfg	1,1 Ko	 myds20.log.upto2015-07-28-163408	853 octets	 myds20.log.upto2015-07-30-115902	96,4 Ko
 myds20.log	12,6 Ko				

Manage recursive jobs: license expiration check, log events (cron)

Description

This option checks and opens the root's "crontab" file in order to schedule recursive jobs.

Example:

```

STROMASYS - Virtualization Technologies V1.5
Manage recursive jobs (cron)

Checking...
Checking 'charon_expchk' presence in crontab file...
Checking 'charon_mongstop' presence in crontab file...
Checking 'charon_logevent' presence in crontab file...
Checking 'charon_console_autoconnect' presence in crontab file...
Checking 'charon_logarchive' presence in crontab file...
Done. ✓

Available editors
g - gedit (windows notepad like)
n - nano (basic text editor)
v - vi (advanced users standard text editor)
m - vim (advanced users improved text editor)
q - quit
Select the editor you want to use: █

```

Notes:


- Alerts will be sent using the common alert script, see chapter [Alerts management - Update/reinstall common alert script](#)
- License expiration alert levels are explained here: [Check for license expiration](#)
- If the "crontab" file does not exist, it is initialized with comments in order to facilitate settings like this:

```

# root crontab
#-----
# Syntax:
#
# * * * * * command to execute
# | | | | |
# | | | | +----- day of week (0 - 6) (0 to 6 are Sunday to Saturday, or use names)
# | | | +----- month (1 - 12)
# | | +----- day of month (1 - 31)
# | +----- hour (0 - 23)
# +----- min (0 - 59)
#
# Checks for license expiration: runs everyday at 09:00 with alert set to 15 days before expiration
0 9 * * * /opt/charon/utils/charon_expchk 15
#
# Monitor unrequested guests stop
* * * * * /opt/charon/utils/charon_mongstop
#
# Log events report
* * * * * /opt/charon/utils/charon_logevent
#
# Console autoconnect utility
* * * * * /opt/charon/utils/charon_console_autoconnect
#
# Logs archiving utility (each Monday 00:00)
0 0 * * 1 /opt/charon/utils/charon_logarchive -keep=60 -zip

```

Expiration check alert (charon_expchk)

 The expiration check alert sends alerts by default 15 days before expiration (7 days in interactive mode).

This number of days can be changed using parameter 1 as number of days

Example for 21 days, running everyday at 08:00AM and 04:00PM (16:00):

```
0 8,16 * * * /opt/charon/utils/charon_expchk 21
```

More details on crontab at: <http://en.wikipedia.org/wiki/Crontab> (credits: wikipedia)

The '-nomail' parameter can be used to make the script check if the license dongle can be read: if not or if a timeout is detected, the aksusbd drivers are restarted. This is mainly used for debugging.

Monitor abnormal termination of the guests (charon_mongstop)

This job is active by default, it is recommended not to prevent it from running. It's goal is to send alerts if a guest has been stopped whereas it was not requested.

It is mainly used if you're running on Red Hat Enterprise Linux 6; version 7 and Fedora are using `systemd` feature to alert in case of service abnormal termination

Log events (charon_logevent)

This job is active by default, it is recommended not to prevent it from running. It's goal is to scan for events in the guests active log files and send alerts based on alert level defined by the administrator. It runs by default every 1 minute so alerts will be sent in bulk mode rather than one alert per error detected. The interval can be updated at your convenience.

Console autoconnect (charon_console_autoconnect)

This utility will check if the guest is running: if the console log is not defined in the configuration file (`set OPA0 log=xxx`), it will check no one is connected to the console via "telnet localhost <port>". If no one is connected, it will connect to the console using the 'screen' command and will record the console output.

For more information, see [Connect to guest console - Autoconnect feature](#)

Notes:

- If you want to connect to the console, via [Connect to guest console](#) menu option, you will have the option to kill the active one and then connect interactively.
- It is possible to disable this feature from the [Connect to guest console](#) menu.

Logs archiving utility

This utility will archive services log files and guests console log files (if not managed by the emulator itself)

Default from the `crontab` entry is to keep files for 60 days and then zip older log files. Zipped files will be kept for 6 months

Alerts management

Description

This option will allow you to change alert management settings as shown below:

```
STROMASYS - Virtualization Technologies V1.1
Alerts management

No  Parameter                                Current value(s)
---  -
1 - Mail mode (text/html)                   HTML
2 - Mail recipients list                    bruno.miretti@stromasys.com
3 - Create/Update alert mail footer        STROMASYS Bruno PC - Toolkit Source
4 - 'wall' alert messages                  Disabled
5 - Update/reinstall alert script          Installed (from example)
6 - Select guests log alert level          WARNING + ERROR
7 - View alerts history (210 alerts)       Last update: Tue 18-Aug-2015 14:30:41
8 - Lic. expiration alerts from guests    Disabled

Enter your choice ('q' to quit): █
```

Settings

Mail mode (TEXT/HTML)

Alerts are by default sent in HTML format. With some mail clients, HTML mails are not correctly displayed or even rejected. This option is used to switch between HTML format and pure TEXT format.

HTML mail example:

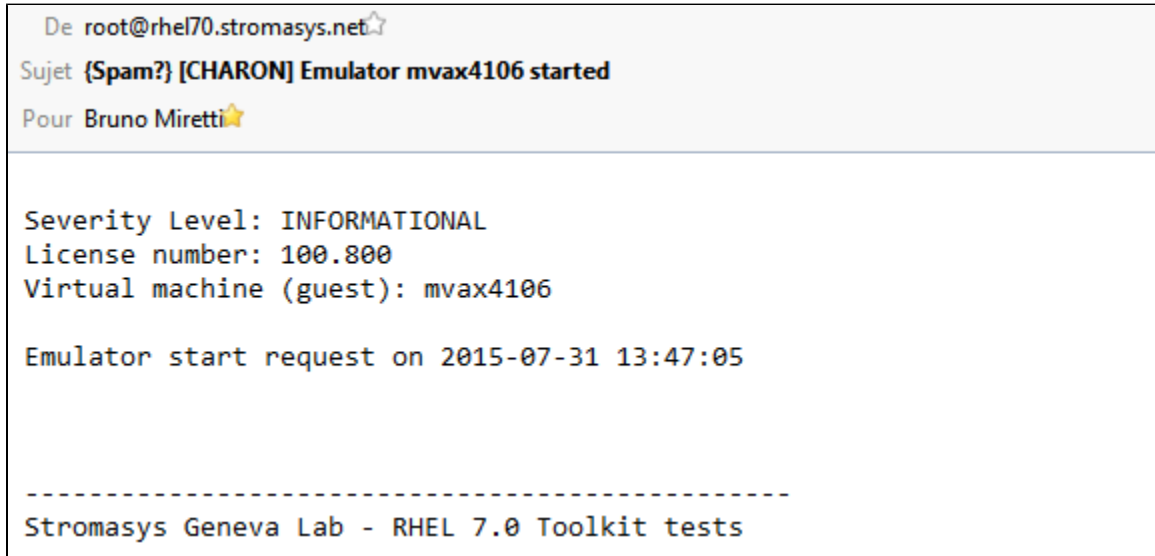
```
De root@rhel70.stromasys.net ☆
Sujet {Spam?} [CHARON] Emulator myds20 started
Pour Bruno Miretti ☆

Severity Level: INFORMATIONAL
License number: 100.800
Virtual machine (guest): myds20

Emulator start request on 2015-07-10 12:35:53

-----
Stromasys Geneva Lab - RHEL 7.0 Toolkit tests
```

TEXT mail example:



Mail recipients list

All alerts coming from monitoring scripts and checks scripts are sent using a common alert script which by default sends a "wall" message to all connected users and an email (via "sendmail") to the recipients list that can be defined using this option.

i The common alert script can be customized too if you prefer not to receive emails and use commands from your monitoring software for example.

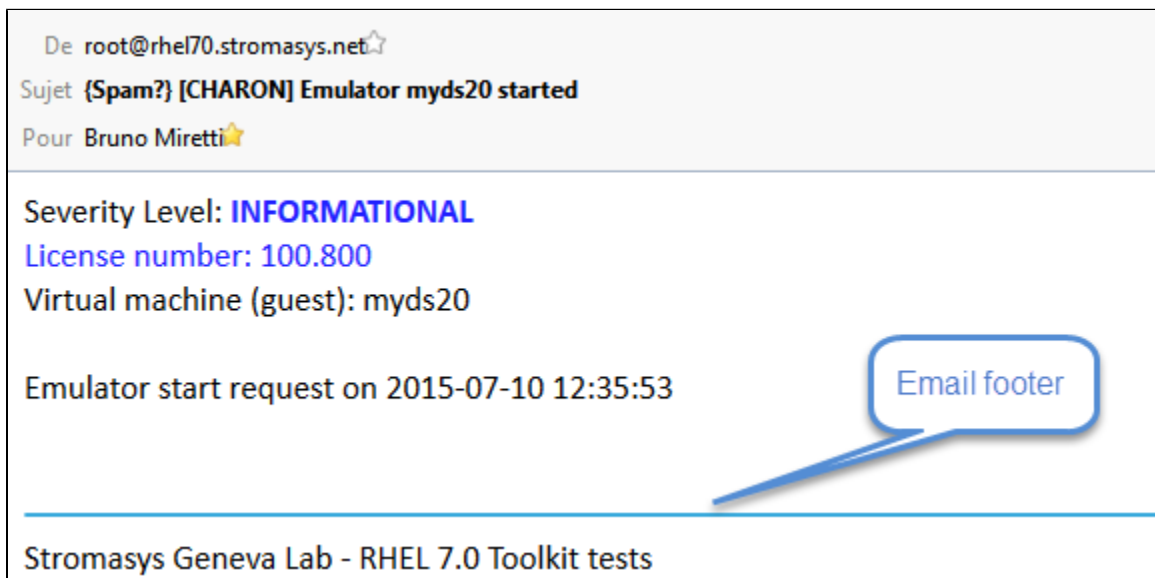
! Do not add blank lines and set one recipient per line

Create/update alert mail footer

Used to add comments at the end of the mail.

! HTML tags like new line, font and bold can be added within the file. In case the format is switched to TEXT, these tags will be automatically removed from the text mail.

Example:



Enable/disable wall alert messages

Alerts are by default sent via email (`sendmail`) and via via "wall" messages to all the connected users .

This option enables or disables these "wall" messages.

Update/reinstall common alert script

All alerts coming from monitoring scripts and checks scripts are sent using a common alert script.

If this script does not exist, it is initialized by copying an example provided in the kit.

If it exists and is different from the original one, you are invited to reinitialize it from the default one:

- Answer "yes" if you did not change the original script file and you have updated the Linux Toolkit (read the corresponding release notes)
 - Do not answer "yes" if you customized your own alert script.
- 💡 In case you've overwritten the existing alert script, the previous version can be restored from the `"/charon/archive"` folder

Example:

```

STROMASYS - Virtualization Technologies V1.1
Alerts management

No  Parameter                                Current value(s)
---  -
1 - Mail mode (text/html)                    HTML
2 - Mail recipients list                     bruno.miretti@stromasys.com
3 - Create/Update alert mail footer          Stromasys Geneva Lab - RHEL 7.0 Toolkit
4 - Enable/disable wall alert messages      Disabled
5 - Update/reinstall alert script           Customized
                                           Last update: Fri 31-Jul-2015 14:02:56
6 - Select guests log alert level           WARNING + ERROR
7 - View alerts history (18 alerts)         Last update: Fri 31-Jul-2015 13:48:01

Enter your choice ('q' to quit): 5
Do you want to reinstall the alert script from the kit ?
If you customized it, it will be saved and overwritten (y/n) :

```

This script can be customized to send alerts the way you want, adding for example commands to link with your monitoring tool. It is based on an alert code passed as parameter 1.

All other parameters are information related to the alert. The script uses templates in order to send emails and wall messages (see `"/opt/charon/utlils/templates/*.mail"` and `"/opt/charon/utlils/templates/*.wall"` files if needed).

The table below lists all available values for parameter 1 in case you plan to customize the scripts and send alerts by your own (monitoring software lines of commands, `snmptrap`, etc...)













Parameter 1 can be the following:

Parameter 1	Severity	Description
ABORTED	CRITICAL	Guest has stopped without user or service request
AKSUSBFAIL	CRITICAL	If the dongle is detected as removed whereas it is disconnected, the askusb daemons are restarted. If the restart fails after 15 tries, this message is sent
BOOTDUPL	WARNING	Tried to start a guest that is already running or a guest is found more than once in the guests list
BOOTNOTFND	CRITICAL	The file containing the guests to start is empty or not found
EMULSTART	INFORMATIONAL	Emulator has been started

EXPCHK	CRITICAL, MAJOR, MINOR, INFORMATION	The license is about to expire
FOUND	INFORMATIONAL	License dongle found at startup
HASPWARN	CRITICAL	Warning messages found in the license, guests cannot start
IFCFGADDR	CRITICAL	The network interface defined in the configuration has already an assigned IP address, cannot be used for guest
IFCFGCRIT	CRITICAL	One parameter in the ifcfg-ethN file is not configured correctly (mandatory value)
IFCFGUNKN	CRITICAL	The interface name defined in the configuration file is not valid (not found with 'ifconfig <eth>' command)
IFCFGWARN	WARNING	One parameter in the ifcfg-ethN file is not configured correctly (recommended value)
INVALID	CRITICAL	Invalid configuration on dongle to start the guest
NOTFOUND	CRITICAL	The guests have not been able to start at boot due to dongle disconnected
REMOVED	CRITICAL	Dongle has been removed: the guest sees the dongle as disconnected and will stop after the defined interval if the dongle is not replaced
REMOVRESET	ERROR	Dongle seen as removed whereas not disconnected (aksusb driver failure). In this case the USB is reset and drivers are restarted (⚠️ Not valid if the dongle is a network dongle and then located on another server)
STOPPED	CRITICAL	Guest has been stopped, reasons explained in parameters 4, 5 and 6
STOPPEDREQ	INFORMATIONAL	Guest has been stopped, requested by user or shutdown
TESTMAIL	INFORMATIONAL	Used to test email mode when setting HTML or pure TEXT
TOEXIT	CRITICAL	The guest is about to exit, reasons explained in parameters 4 and 5
USBDISCONNECT	MAJOR	Dongle has been removed (immediate detection)

Select guests log alert level

Select the alert level to send alerts when events are found in the guest log file:

Level	Information	Warning	Error
0			
1			
2			
3			

★ Requires the "charon_logevent" entry activated in the "crontab" file => menu option 11 - Manage recursive jobs: license expiration check, log events (cron)

 This does not affect guest startup alerts. You will receive alerts when a guest starts or stop whatever the level is.

View alerts history

This option will allow you to view the alerts history sent via the alert script. Alerts can be viewed in a continuous way or using a text editor.

Example: Continuous view

```
Continuous view of /opt/charon/log/charon_alerts.log
Press CTRL-C to stop

20150731:134713:ALERT:Emulator mvax4106 started
Severity Level: INFORMATIONAL
License number: 100.800
Virtual machine (guest): mvax4106

Emulator start request on 2015-07-31 13:47:05

20150731:134719:ALERT:License dongle found for mvax4106
Severity Level: INFORMATIONAL
License number: 100.800
Virtual machine (guest): mvax4106

Date limited license, limited to: 4/Aug/2016 01:55:00.


20150731:141415:ALERT:License dongle disconnected
Severity Level: MAJOR


Disconnection of the USB license dongle detected.
This can be due to physical disconnection or USB and/or HASP driver reset (aksusb
bd)
Please check.

20150731:141447:ALERT:License dongle found for All CHARON virtual machines on se
rver rhel70.stromasys.net
Severity Level: INFORMATIONAL
License number: 100.800
Virtual machine (guest): All CHARON virtual machines on server rhel70.stromasys.
net

Detected connection of the USB license dongle
```

We can see above:


1. A message telling the emulator is started
2. A message telling the license is found and that also displays its expiration date
3. The license dongle has been unplugged and the aksusb driver reported the alert (immediate)
4. The license dongle was plugged in again.
 -  We do not see here any dongle removal alert reported by the emulator itself, this is because by default the emulator checks for dongle presence every 1 hour (deferred)

 Press **CTRL-C** to get back to the previous menu

License expiration alerts from guests

This option will toggle on/off the alerts WARNING alerts sent from the guest log file. By default these alerts are sent once per hour 120 hours before expiration whatever the license interval check is set to.

If you have setup the log level alert option to receive WARNING messages then you will receive one alert per hour. This option can be disabled if the expiration check entry is set in the crontab (by default).

 Backup licenses (time limited): please take care of the time remaining that will be reported in the license detection alert, if the number of remaining hours is less than 24, you could not receive any alert from the license expiration check that runs everyday at 09:00 AM by default. It is possible to make it run more than once a day in this case.

Show host information (OS, HW, Charon version, utils and services)

Description

Opens a submenu that provides information on the running CHARON server:

- Hostname
- Operating system name, kernel version, uptime
- Hardware: CPU, memory, USB devices
- Storage: file systems
- Network interfaces
- CHARON version: programs found and installed packages
- CHARON utils and services: scripts version, services status, content of configuration files
- Current kit version/date with an option to view release notes



Output can be displayed directly, sent to html file and opened with Firefox or sent via email

Menu options list

```

STROMASYS - Virtualization Technologies                                     Kit#41
STROMASYS - Virtualization Technologies

Show host Information (full)
 1 - Display with enhanced video
 2 - Display pure text
 3 - Send pure text file to recipient
 4 - Generate and open HTML file
 5 - Send HTML file to recipient
Show host Information (by group)
 6 - Operating system
 7 - Hardware
 8 - Storage
 9 - Network
10 - CHARON version
11 - CHARON utils and services

Enter your choice ('q' to quit): █

```

Documentation

Description

This option will either open the attached documents, users guide (PDF file / "evince" required) and release notes (text file / using "vi") or will lead you to the online version of the documentation or our [Product Documentation and Knowledge Base](#) space (using "firefox")

Please note the users guide and release notes latest versions will be available first on the WEB, kit attached documents, could be outdated.

Menu options

```
STROMASYS - Virtualization Technologies Kit#41
STROMASYS - Virtualization Technologies


Documentation
1 - Local PDF document (evince)
2 - Online documentation (firefox)
3 - Product documentation and Knowledge Base (firefox)
CHARON Linux Toolkit version 41 (31-Jul-2015 13:26)
4 - View release notes (vi)








Enter your choice ('q' to quit): █
```


Technical part

Scripts and files description

All scripts and files are located in the `/opt/charon/Utils` folder except for `.charon*` files. The "Custom" column below indicates the file will not be overwritten with new kit installation/upgrade.

 Greyed cells represent obsolete files that could be present if you upgrade from a previous kit

File	Type	Custom	Description
<code>charon_check.alertcmd</code>	Shell script		Common script file used for alerts. If it does not exist, it is cloned from the example file (see below)
<code>charon_check.alertcmd.example</code>	Shell script		Example of common script file used for alerts. By default alerts are 'wall' and 'mailx' based
<code>charon_check.mailfooter</code>	Data file		Contains the mail footer used to send email alerts (see above)
<code>charon_check.mailto</code>	Data file		Contains the mail recipients list used to send email alerts (see above)
<code>charon_common</code>	Shell script		Script file including common variables and functions
<code>charon_common_menu</code>	Shell script		Script file including common variables and functions for menus
<code>charon_console_autoconnect</code>	Shell script		Script executed in the crontab file to connect to the guests console if no user is already connected, records all console output
<code>charon_expchk</code>	Shell script		License expiration check or key reading check with '-nomail' parameter
<code>charon_gstart</code>	Shell script		Manages start/stop of the guests, defined as a service
<code>charon_gstart.boot</code>	Data file		Contains the guests list for start/stop: HW emulator and configuration file
<code>charon_gstart.chkrun</code>	Shell script		Optional script, user made, used to display status of the guest by the guest start menu (<code>charon_menu_gstart</code>)
<code>charon_gstart.chkrun.example</code>	Shell script		Example for the one one above
<code>charon_gstart.stop</code>	Shell script		Optional script that enables the customer to insert proper guests shutdown commands (based on 'ssh' or 'expect' tool for example). This script is generated on user request.
<code>charon_gstart.stop.example</code>	Shell script		Example for the script above including 'ssh' and 'expect' usage for VMS and Tru64 operating systems.
<code>charon_licenses.list</code>	Data file		Optional file that contains the list of licenses (number), their description and a display color code
<code>charon_linux_toolkit.Vxx.tar</code>	Tar file		Contains the full Linux Toolkit package where "xx" represents the kit number (starting with kit number 41)
<code>charon_linux_utils.kitxx.tar</code>	Tar file		Contains the full Linux utils kit where "xx" represents the kit number (kits number 40 and below)
<code>CHARON_Linux_Toolkit_UG.pdf</code>	Document		Toolkit users guide, PDF format (starting with kit number 41)
<code>charon_linux_utils.pdf</code>	Document		Utilities users guide, PDF format (kits number 40 and below)
<code>charon_logarchive</code>	Shell script		Manage services and guests console logs archiving

charon_logchk	Shell script		Manages guests log monitoring, defined as a service
charon_logchk.list	Data file		Contains the list of guests log files to monitor
charon_logevent	Shell script		Check for new events in the guests log files and sends alerts depending on the selected level
charon_menu_alertsmgr	Shell script		Menu: Alerts management
charon_menu_alertcmd	Shell script		Menu: alert script editing (kits number 40 and below)
charon_menu_alert.dat	Data file		Contains the options list for the alerts menu (kits number 40 and below)
charon_menu_c2v	Shell script		Menu: creates and send C2V file
charon_menu_console	Shell script		Menu: connection to guest console
charon_menu_cron	Shell script		Menu: edit crontab for license expiration check
charon_menudoc.dat	Data file		Contains the options list for the Documentation submenu
charon_menu_editcfg	Shell script		Menu: edit guests configuration file
charon_menu_gstart	Shell script		Menu: guests start/stop management, install service, edit guests list, etc...
charon_menu_hostinfo	Shell script		Menu: host information report management
charon_menulistinfo.dat	Data file		Contains the options list for the Host information submenu
charon_menu_logchk	Shell script		Menu: guests log monitoring management
charon_menu_logevent	Shell script		Menu: selection for the of guests logs alert level (kits number 40 and below)
charon_menu_mailfooter	Shell script		Menu: customize alerts email footer (kits number 40 and below)
charon_menu_mailmode	Shell script		Menu: selection of the alert emails mode, HTML or pure TEXT (kits number 40 and below)
charon_menu_mailto	Shell script		Menu: mail recipients list management (kits number 40 and below)
charon_menu_ncu	Shell script		Menu: check if 'ncu' is installed and execute it
charon_menulistmain.dat	Data file		Contains the options list for the main menu
charon_menu_sendlogs	Shell script		Menu: send configuration and log files via email
charon_menu_showlic	Shell script		Menu: show license content
charon_menu_v2c	Shell script		Menu: Install or Update (apply V2C file)
charon_menu_walloff	Shell script		Menu: enable/disable alert wall messages (kits number 40 and below)
charon_mongstop	Shell script		Monitors abnormal termination of the services (guests)
charon_setup	Shell script		Charon installation/upgrade/remove script

charon_showhostinfo	Shell script		Gather Charon server information
events	Folder		Contains the events found in guests log files that will be sent via mail. Contains only events detected since last charon_logevent script execution (crontab)
fixgedit	Shell script		Prevents from gedit command to display garbage messages. Execute this script before like this: # . /opt/charon/utis/fixgedit
guest_shutdown.exp	Expect script		This 'expect' script contains sequence for Tru64 and VMS shutdown. See explanation in the Tips and Tricks chapter
kit.version	Data file		Contains kit version and release date (updated by the maketar script below)
menu_mod.pl	Perl script		Menu display based on data file
menusetup	Shell script		Kit installation script, setup the 'menu' command
MyTput.pm	Perl module		Contains enhanced display commands used by menu_mod.pl
pluto.cfg.example	Data file		Configuration file used for guests tests
release-notes	Text file		Release notes
requests	Folder		Contains flag files that determines the guest has been stopped properly (requested stop). If the guest is stopped and the file does not exist, it indicates an abnormal termination of the guest Flag files are empty and have the following name: configuration file name + ".stop" (example: pluto.cfg.stop)
ssh-linux-openvms-setup.readme	Text file		Tips on how to create ssh trust between Linux and Openvms
ssh-linux-tru64-setup.readme	Text file		Tips on how to create ssh trust between Linux and Tru64
templates	Folder		Contains templates used to send alerts via 'mailx' and 'wall'
\$HOME/.charon.autoconnect	Data file	✓	Console autoconnect enabled (contains 1) or disabled (contains 0)
\$HOME/.charonconslogdir	Data file	✓	Location for the console log file can be changed by placing the desired folder name in this file. Default is /opt/charon/log folder if this file is not created
\$HOME/.charonkitfolder	Data file	✓	Contains the Charon kit location provided at installation
\$HOME/.charon.lastrecipient	Data file	✓	Contains the last email recipient used for the above options in order to prevent from typing again the email address
\$HOME/.charonlogevent	Data file	✓	Contains the alert level selected for guests log files events
\$HOME/.charonmailmode	Data file	✓	Contains mail mode used to send email alerts, either HTML (default if the file does not exist) or TEXT. Used by charon_check.alertcmd script
\$HOME/.charonsoftlicfolder	Data file	✓	Contains the software license kit location (where the dinst and dunst script files are located)
\$HOME/.charon.recipient	Data file	✓	Contains the email recipient selected when sending hasp_srm_view output, C2V file or host information html report
\$HOME/.charonwalloff	Data file	✓	Exists if the "wall" message are disabled
\$HOME/.charon.expchk.nodongle	Data file	✓	Exists if the expiration check script has detected the absence of the dongle. This is to prevent from sending expiration alert messages if no dongle is present (the alert will be sent only once)
\$HOME/.charonlicfolder	Data file	✓	Contains the folder name where all the license files, C2V and V2C, are located


Notes:

- Menu data files format is detailed using the following command:

```
# /opt/charon/utils/menu_mod.pl -fd
```

Manual services management

Request	Command	
	Linux distribution without <i>systemd</i> (Red Hat Enterprise Linux 6)	Linux distribution using <i>systemd</i> (Red Hat Enterprise Linux 7 and Fedora)
Services list	<pre># chkconfig -list grep ^Charon</pre> <p>There are 2 services that can be installed:</p> <ul style="list-style-type: none"> • charon_gstart: guests start/stop • charon_logchk: log monitoring 	<pre># systemctl grep ^charon</pre> <p>Typically there is:</p> <ul style="list-style-type: none"> • one service for dongle connection/disconnection monitoring (charon_monusb) • 2 services per guest (virtual machine), one for the emulator itself and one for the log monitoring
Prevent service to start at boot	<pre># chkconfig <service> off</pre>	<pre># systemctl disable <service></pre> <p>⚠ It is not recommended to use command line to do so, please use menu option 6</p>
Enable service start at boot	<pre># chkconfig <service> on</pre>	<pre># systemctl enable <service></pre> <p>⚠ It is not recommended to use command line to do so, please use menu option 6</p>
Start or Stop service	<pre># service <service> start</pre> <pre># service <service> stop</pre> <p>Without supplemental parameter, all guests or logs monitoring are stopped</p> <p>To stop a dedicated guest, add the configuration file name</p> <p>To stop a dedicated log file monitoring, add the log file name</p> <p>Files can be truncated to their name only, directory and extension will be automatically completed</p> <p><u>Example:</u></p> <pre># service charon_gstart stop pluto</pre> <pre># service charon_gstart stop /opt/charon/cfg/pluto.cfg</pre>	<pre># systemctl start <service></pre> <pre># systemctl stop <service></pre> <p><u>Example:</u></p> <pre># systemctl start charon_pluto</pre>
Service status	<pre># service <service> status</pre>	<pre># systemctl status <service></pre> <p>Use of the following options is recommended: "-l --lines=xx" where "x" a number of lines from the journal to show, counting the most recent ones.</p>

Service removal	# chkconfig -del <service>	<p>First disable the service:</p> <pre># systemctl disable <service></pre> <p>then remove (optional) the associated service file:</p> <pre># rm /etc/systemd/system/<service>.service</pre> <p>Example:</p> <pre># systemctl disable charon_pluto # systemctl disable charon_logmon_pluto # rm /etc/systemd/system/charon_pluto.service # rm /etc/systemd/system/charon_logmon_pluto.service</pre> <p> It is not recommended to use command line to do so, please use menu option 6</p>
-----------------	-----------------------------------	---

Tips and Tricks

Table of contents

- 'vi' and 'vim' text editors
- 'gedit' graphical editor
- 'nano' text editor
- How to setup 'ssh' trusts between Linux and Tru64
- How to setup 'ssh' trusts between Linux and VMS
- Shutdown guests with Expect tool
 - Introduction
 - Script usage

'vi' and 'vim' text editors

Notes:

- When typing text, press <ESC> once finished. In case you're blocked, press also <ESC> before executing commands described below
- both is case sensitive

Request	Command
To quit without saving	Press ':' then enter 'q!'
To quit with saving	Press ':' then enter 'x' or 'wq'
Go to top of file	Press ':' then enter '0'
Go to last line	Press 'G'
Search pattern	Press '/' then enter your search text. Press then 'n' for next (forward) or 'N' for backward
Remove current character	Press 'x'
Insert text	Press 'i' (press ESC once text completed)
Insert line	Press 'o' for a line below cursor, 'O' for a line above cursor (press ESC once text completed)
Delete a line	Press 'dd'

'gedit' graphical editor

'gedit' is a graphical text editor, users familiar with Windows notepad should not encounter difficulties to use it.

Request	Command
To quit	close the window by clicking on the cross top right corner
Save file	Press <CTRL-S>

'nano' text editor

'nano' is a basic text editor, very simple to use and displaying available commands at the bottom of the screen. For example, to leave 'nano', use ^X (press CTRL + X)

How to setup 'ssh' trusts between Linux and Tru64

Notes

- The prompts will tell you where to execute the commands, "Tru64#" (root user) or "Linux#" (root user)
- Remember Linux/Unix is case sensitive
- If hosts are not known by each other, fill the `/etc/hosts` file for example (using `vi` for example)
- `linuxhost` represents the name of your CHARON server (can be any name you want)
- `tru64host` represents the hostname of your Tru64 virtual machine

- Generate the key

```
Linux# cd /root/.ssh
Linux# ssh-keygen -t dsa
Linux# ssh-keygen -e -f id_dsa.pub > linuxhost.pub
```

- Copy the `linuxhost.pub` file, or use copy/paste, in the `/.ssh2` folder on the Tru64 host
- Define the **authorization** file:

```
Tru64# cd /.ssh2
Tru64# echo "Key linuxhost.pub" >> authorization
```

- Initialize the first ssh connection (answer 'yes' to confirm)

```
Linux# ssh tru64host date
```

then retry the same command to verify the trust is working.

How to setup 'ssh' trusts between Linux and VMS

Notes

- The prompts will tell you where to execute the commands, "VMS#" (system user) or "Linux#" (root user)
- Remember Linux/Unix is case sensitive, VMS is not
- Linux: if VMS host is not known, add it to `/etc/hosts` for example
- VMS: if Linux is not known, add it using: `$ UCX SET HOST LINUX /ADDR=xx.xx.xx.xx`

- Enable SSH on the VMS server:

```
VMS$ SET DEF SYS$LOGIN
VMS$ @TCPIP$CONFIG
```

Select then:

- Option 3 - Server components then enable and start service SSH, option 19
- then Option 2 - Enable & Start service on this node

```
...
* Create a new default server host key? YES: YES
  Creating private key file: TCPIP$SSH_DEVICE:TCPIP$SSH.SSH2]HOSTKEY
  Creating public key file: TCPIP$SSH_DEVICE:TCPIP$SSH.SSH2]HOSTKEY.PUB
...
```

- If VMS has to connect to Linux, configure the SSH CLIENT:

```
...
* Do you want to configure SSH CLIENT [NO]: YES
...
```

Select then:

- Option 2 - Enable & Start service on this node
 - Exit with **E** twice
-
- Copy these files from the default SSH user for the SYSTEM one:

```
VMS$ SET DEF SYS$LOGIN
VMS$ CREATE/DIR [.SSH2]
VMS$ COPY TCPIP$SSH_DEVICE:[TCPIP$SSH.SSH2]HOSTKEY [.SSH2]
VMS$ COPY TCPIP$SSH_DEVICE:[TCPIP$SSH.SSH2]HOSTKEY.PUB [.SSH2]
VMS$ COPY TCPIP$SSH_DEVICE:[TCPIP$SSH.SSH2]SSH2_CONFIG [.SSH2]
VMS$ EDIT [.SSH2]SSH2_CONFIG
```

⚠ Uncomment: **BatchMode** **yes**

⚠ Find and set: **AllowedAuthentications** **publickey, password**

- Generate the key and convert it to be readable by VMS

```
...
* Do you want to configure SSH CLIENT [NO]: YES
...

Linux# ssh-keygen -t dsa (then 3 times Enter with default values)
Linux# ssh-keygen -e -f /root/.ssh/id_dsa.pub > /root/.ssh/linux.pub
```

- Copy the file `/root/.ssh/linux.pub`, or use copy/paste, to the VMS system in the `sys$sysroot:[sysmgr.ssh2]` directory
- Copy the **hostkey.pub** file from the VMS system to the Linux one:

```
Linux# ssh system@VMS "type [.SSH2]HOSTKEY.PUB" >/root/.ssh/VMS.orig.pub
```


⚠ Enter **YES** then the VMS system password

- Import the VMS public key and add it to the authorized keys:

```
Linux# ssh-keygen -i -f /root/.ssh/VMS.orig.pub >/root/.ssh/VMS.pub
Linux# cat /root/.ssh/VMS.pub >>/root/.ssh/authorized_keys
```

- Define the VMS identification file:

```
VMS$ SET DEF SYS$SYSLOGIN
VMS$ SET DEF SYS$SYSROOT:[.SSH2]
VMS$ OPEN/WRITE TMP IDENTIFICATION.
VMS$ WRITE TMP "IDKEY HOSTKEY"
VMS$ CLOSE TMP
```

 Do not forget the dot at the end of the identification file name

- On the VMS system add the Linux key to the authorized keys:

```
VMS$ SET DEF SYS$SYSLOGIN
VMS$ SET DEF SYS$SYSROOT:[.SSH2]
VMS$ OPEN/WRITE TMP AUTHORIZATION.
VMS$ WRITE TMP "KEY LINUX.PUB"
VMS$ CLOSE TMP
```

 Do not forget the dot at the end of the authorization file name

- Perform tests (examples)


Charon server name "charon", vms system name "pluto":

```
charon# ssh system@pluto "show system"
OpenVMS V7.3-2 on node PLUTO 27-SEP-2013 11:50:14.37 Uptime 0 19:20:07
Pid Process Name State Pri I/O CPU Page flts Pages
00000201 SWAPPER HIB 16 0 0 00:00:02.55 0 0
00000204 LANACP HIB 14 70 0 00:00:00.05 109 135
...
```

Shutdown guests with Expect tool

Introduction

In case SSH cannot be used to perform clean shutdown of the guests, the "expect" tool can be used to connect to the console and perform the login operation then execute the shutdown command.


 In this case the password is sent without encryption.

To facilitate use of "expect" for shutdown, an example is provided in the "guest_shutdown.exp" script located in the `/opt/charon/utils` folder. If you plan to customize the script, you'll have to create a copy and not use it directly as it will be overwritten in case of Toolkit upgrade.


Console locked:

Any active session to the console must be killed before the "expect" script is executed.

 For example, if you are connected via "telnet" on the localhost/port (the kill is not done inside the expect script). See examples in the `/opt/charon/utils/charon_gstart.stop.example` file.

 If the console is locked from another host (if you use putty for example), you will have to cancel the connection by yourself otherwise the shutdown will not be performed cleanly.

This script can handle the following situations:

- No user connected on the console:
 - **Expect:** "Username: " (VMS) or "login: " (Tru64)
 - **Action:** An interactive session will be initiated based on <user> and <password> provided in the parameters
- A user is connected on the console:
 - **Expect:** <prompt> provided in the parameters
 -  This user must have privileges to perform shutdown as no logout will be issued
 - **Action:** Depending on the Operating system parameter (see <opsys> below), the shutdown command will be sent
- Console is at SRM prompt:
 - **Expect:** '>>>' (so works with VAX and Alpha with "P00>>>")
 - **Action:** A 'power off' command will be issued. If the command is not recognized, the F6 key will be sent (this must be enabled within the configuration file). If the F6 key did not stop the emulator, the script will exit with error code 9 meaning you will have to kill the emulator process yourself (see examples in the `/opt/charon/utils/charon_gstart.stop.example` file)

Script usage

Usage:

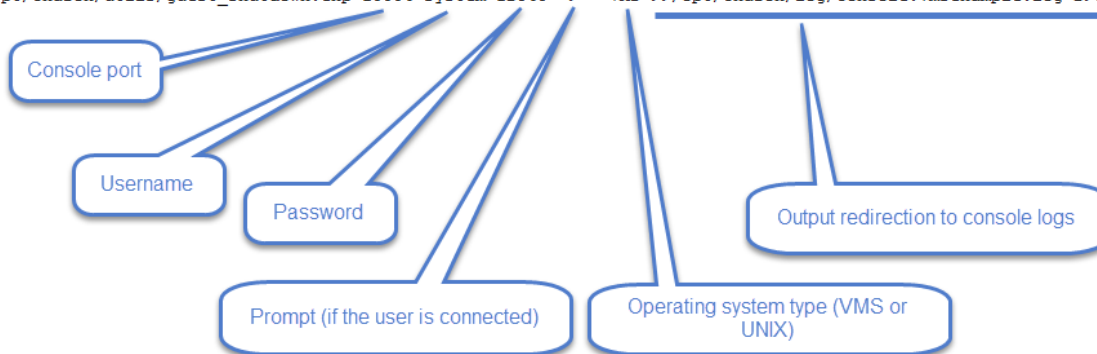
```
# path/script <port> <user> <password> <prompt> <opsys>
```

Parameters:

Parameter	Description
<port>	telnet port number (example: 10003)
<user>	username for login (must be able to perform shutdown)
<password>	password
<prompt>	shell prompt (including end space) or last characters of the prompt
<opsys>	VMS or UNIX

Example: (examples are given in the `/opt/charon/utils/charon_gstart.stop.example` file)

```
/opt/charon/utils/guest_shutdown.exp 10004 system 12345 "> " VMS >>/opt/charon/log/console.vmsexample.log 2>&1
```



Alert emails examples

License dongle not present

[CHARON] License key not found at boot

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 1:34 PM

To: Bruno Miretti

Severity Level: **CRITICAL**

License key not found at startup after 5 tries.

Please check.

STROMASYS GENEVA LAB - Linux Utilities SOURCES

License dongle now connected

[CHARON] License key found for GLOBAL

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 1:40 PM

To: Bruno Miretti

Severity Level: **INFORMATIONAL**

License number: 1000.800

Hostname: GLOBAL

aksusb daemon: detected usb connection

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Emulator start information

[CHARON] Emulator vms started

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 1:41 PM

To: Bruno Miretti

Severity Level: **INFORMATIONAL**

License number: 1000.800

Hostname: vms

Emulator start request on 2014-04-15 13:40:22

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Emulator start - License information

[CHARON] License key found for vms

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 1:41 PM

To: Bruno Miretti

Severity Level: **INFORMATIONAL**

License number: 1000.800

Hostname: vms

Date limited license, limited to: 2/Apr/2015 01:55:00.

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Dongle disconnection: immediate detection

[CHARON] License key disconnected

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 12:04 AM

To: Bruno Miretti

Severity Level: **MAJOR**

aksusb daemon: detected usb disconnection.
Please check.

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Dongle disconnection: emulator detection based on check interval

[CHARON] License key removed

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 12:22 AM

To: Bruno Miretti

Severity Level: **CRITICAL**

License number: 1000.800

Hostname: vms

Date limited license, limited to: 2/Apr/2015 01:55:00.

Normal operation is supported for 59 minutes from now.

AKSUSB daemon is running! WINEHASP daemon is running! HASPLM daemon is running!

LSUSB state: **DISCONNECTED**

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Emulator stopped - no action taken

[CHARON] Emulator vms stopped

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 1:22 AM

To: Bruno Miretti

Severity Level: **CRITICAL**

License number: 1000.800

Emulator stopped at 2014-04-15 01:22:04

Product or license has terminated

License key (LSUSB state): **DISCONNECTED**

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Emulator unrequested stop detection

[CHARON] Emulator vms failed

root@charonrhel64.localdomain

Sent: Tue 4/15/2014 1:23 AM

To: Bruno Miretti

Severity Level: **CRITICAL**
Guest stopped without service request

Executable name: /opt/charon/bin/axp/as4100
Configuration file name: /opt/charon/cfg/vms.cfg

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Errors found in the emulator's log file

[CHARON] CHARON Events found in vms.log

root@charonrhel64.localdomain

Sent: Mon 4/14/2014 5:23 PM

To: Bruno Miretti

Events count:

INFORMATIONAL: Not monitored

WARNING: Not monitored

ERROR: **1**

Events:

- 20140414:172205:ERROR:2:00000352.rawhide_ro(2968): rom: Unable to read container file "/opt/charon/vms.bin". It is out-of-date, not readable or not valid for the specified hardware model and is being re-initialized accordingly. Check settings of console environment and/or system date and time.

STROMASYS GENEVA LAB - Linux Utilities SOURCES

Emulator stopped by user request

[CHARON] Emulator vms stopped

root@charonrhel64.localdomain

Sent: Mon 4/14/2014 5:21 PM

To: Bruno Miretti

Severity Level: **CRITICAL**
License number: 1000.800

Emulator stopped at 2014-04-14 17:21:09
Service stop requested by user or shutdown.

License key (LSUSB state): **CONNECTED**

STROMASYS GENEVA LAB - Linux Utilities SOURCES

License expiration check

[CHARON] License expiration check

✖ SUPPRIMER

← RÉPONDRE

⇐ RÉPONDRE À TOUS

→ TRANSFÉRER



root@rhel70.stromasys.net

mar. 18/08/2015 09:00

marquer comme non lu

À : Bruno Miretti;

Alert requested 15 days before expiration

License: 100.800 (USB)

Description: **Main license, path 2/0/0**

No expired product found.

License: 1000.806 (USB)

Description: **Backup license, path 1/0/0**

Product: CHARON-AXP/DS20, Time remaining: 0 hours and 0 minutes, severity **EXPIRED**

Product: CHARON-VAX/XM for Windows, Time remaining: 0 hours and 0 minutes, severity **EXPIRED**

Please contact your reseller or support@stromasys.com

Stromasys Geneva Lab - RHEL 7.0 Toolkit tests

Quick Setup Guide

i This article will list the operations to be performed to make your emulator running with the CHARON Linux Toolkit.

- Create a folder to store the CHARON products and CHARON Linux Toolkit(s)
Example:

```
# mkdir /charon
```

- Optionally create a folder where to store your licenses (C2V and V2C files):
Example:

```
# mkdir /charon/licenses
```

- Download the kits from the ftp site using 'ftp' or 'FileZilla' for example.



To install ftp, you can:

- either use the following command (Red Hat and Fedora):

```
# yum install ftp
```

- or mount the Linux installation disc (Red Hat), open the "Packages" folder and either double click on the "ftp-*.rpm" file (GUI) or use the "yum install" command.

Example:

```
# yum install "/media/RHEL_6.4 x86_64 Disc 1/Packages/ftp-0.17-53.el6.x86_64.rpm"
```

- Install the CHARON Linux Toolkit as described in the "Setup" page.
- Install the CHARON product(s) you need from menu option "Install/Upgrade/Remove CHARON"
- Dedicate network interfaces to CHARON using menu option "Network Configuration Utility" (ncu) or configure the `ifcfg` files accordingly (see your CHARON product documentation, network part). **i** In both cases, offloading parameters will be disabled.
- Check the license can be read using the "License key display/email" menu option
- Prepare your configuration file(s) or use the clone utility available from the "Service management - Update guests list" menu (see further).
- Create your `vdisk` files using the "mkdiskcmd" command if needed.

Example:

```
# mkdiskcmd -o /data/vms0_rz28.dsk -d rz28
```

- Use the "Service management - Update guests list" from the "Service management (Start, Stop, Manage automatic boot & shutdown)" menu option to add your new virtual machine (guest)
 - First install the service, option "Install or update service" (Linux distributions not using "systemd" only, i.e. Red Hat Enterprise Linux 6)
 - Optionally, use option "Enable/Disable start at server boot" to prevent the guest from starting automatically when the Linux server is booted
 - Optionally (**but highly recommended**), use option "Create/Edit guest stop script" to define the stop script that will be used to stop the service (see examples provided in the '`charon_gstart.stop.example`' file). It is recommended to test your shutdown scripts before going on production
 - Optionally, create the '`charon_gstart.chkrun`' file in the '`/opt/charon/utils`' folder (by copying the '`charon_gstart.chkrun.example`' file) to add information about the guest state when displaying the guests list. See [Optional guest display status script](#)
 - **i** Starting with kit 41, the log file monitoring service is created automatically.

- Connect to the guest console using the "[Connect to guest console](#)" menu option and install or restore the operating system (guest must be running)
- You can remove the USB dongle to verify the dongle removal is identified by the askusbcd log monitor service:
 - If you did not disable the 'wall' alerts from the "[Alerts management](#)" menu, you should receive an immediate 'wall' message.
 - If you disabled the 'wall' alerts from the "[Alerts management](#)" menu, you can have a look at the alerts history from the "[Alerts management](#)" menu
 - If the mail has been correctly configured, you will receive an alert with subject: "[\[CHARON\] License dongle disconnected](#)"