



Install procedure of the system STANTOR v06XX

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Installation manual of the 0.6.X.X version

factor of revision of the document:"AK"

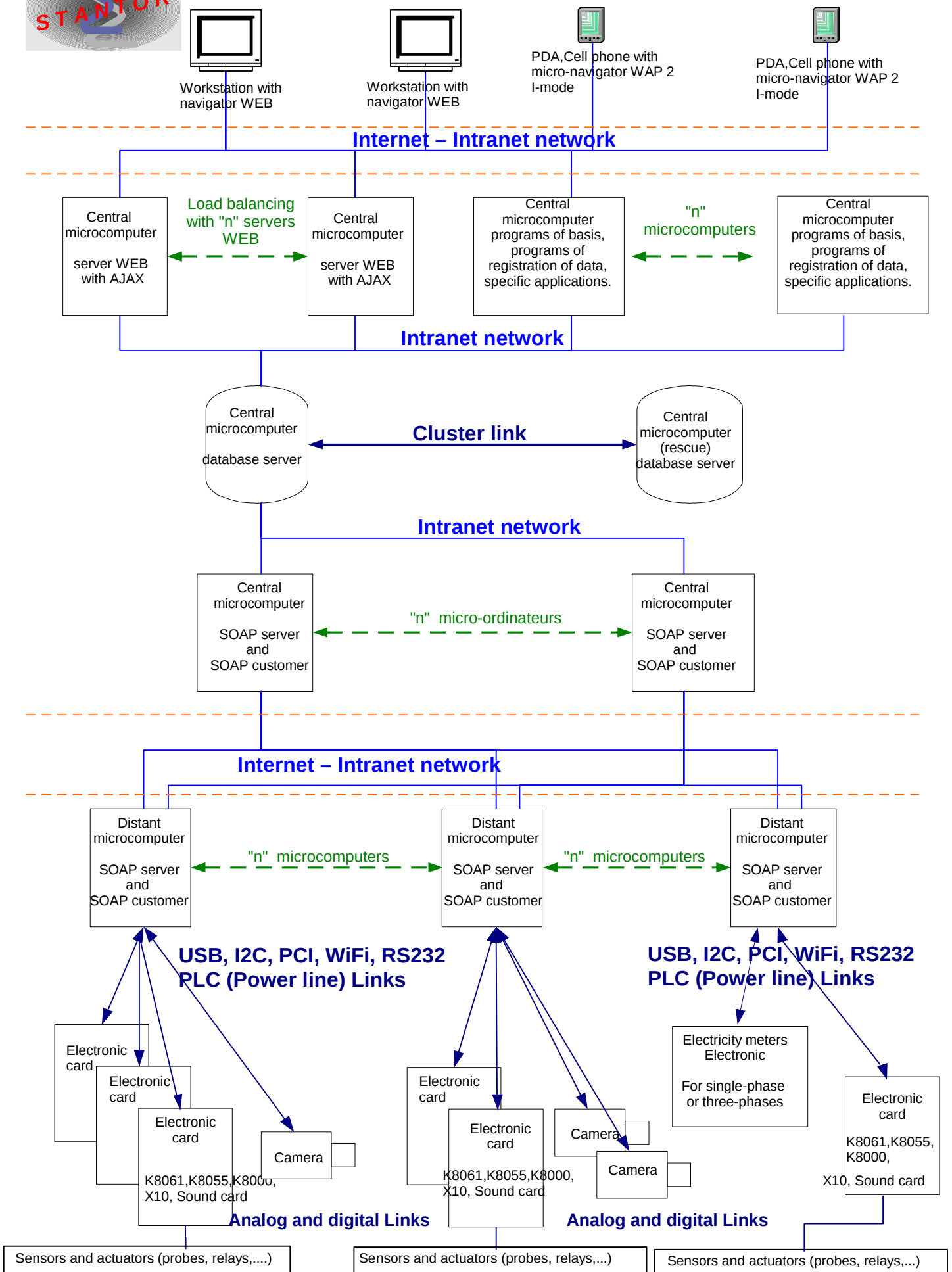
The installation of Stantor is differentiated according to the layout carried on 1 or several physical microcomputers. Indeed the architecture Multi-third party of Stantor v06 permits an installation simplified in mono microcomputer (unique device) like an installation on several microcomputers according to the configuration of the materials microcomputing carried, of the configuration of the materials of retained networks and the user's needs.

Following this physical configuration, the packages and software must be expanded on the microcomputers or corresponding servers. Because of the modularity of Stantor (notion of "tools box") some tasks of installation are optional.

Because of its architecture, Stantor supports simultaneously several K8000/K8055/K8061 cards, several Webcams, several CM11A modules, several electricity meters and several sound cards by distant microcomputer and/or on several distant microcomputers.



Elementary decomposition of the architecture of the system STANTOR v06



1 Description of the distribution file

The file compressed of the distribution (stantor_v06XX-domodulor.tar.gz) consists of several corresponding directories to the architecture of the system.

This distribution consists of the totality of the programs necessary to the performance of STANTOR for all usable materials by this software.

The lower directories have the subdirectories and the specific files to every level of architecture of the system.

The directory "root" of the distribution includes:

- The files read-me and the complements of explanations.
- The file change_log providing information on the changes of the versions.
- Files "install" and "un_install" of the programs of Stantor. These programs of install and un_install are interactive scripts. They are launched starting from a console in command line .

Caution: These scripts do not launch programs. These interactive scripts are usable with the data base provided in example ("/base_de_donnees/base_sql/stantor_exemple.sql") and can be customized according to the needs. These scripts automatically carry out the tasks described below on the basis of example of database.

The directory "base de données" (=database) contains:

- The structure of the database and (mySQL) an example of Stantor database. This structure or this example is to enter in the database that must be created previously on the central server or on a server dedicated to the Stantor database.
- An elementary game of restore and back-up scripts of the Stantor database.
- A tool of configuration of the Stantor database using Open Office 3 (printed forms to the format "open" in XML).
- The diagram of the data base carried out with the MySQL-WorkBench tool (formerly Dbdesigner4).

The directory "documentations" contains :

The files to the format pdf:

- the "description_stantor.pdf" file presenting functionalities of Stantor,
- the "manuel_installation_stantor_v06_linux.pdf" file presenting the install procedure of Stantor on the or the microcomputers.
- the "manuel_parametrage_stantor_v06.pdf" file presenting the procedure of parameterization of the database mySQL used by Stantor.

- the "manuel_utilisation_stantor_v06.pdf" file presenting the instructions for use and the main pages WEB of Stantor.
- the "configureur.pdf" file presenting the autonomous tool of configuration of the Stantor database under OpenOffice 3 .

The directory "gestion_matriels" (management materials) contains:

- A subdirectory "audio" containing the scripts permitting to make operate the sound cards (scripts of start- stop of microphone and loudspeakers).
- A subdirectory "k8k" containing : the software source, the script of compilation and the scripts of start-stop permitting to make operate the cards k8000.
- A subdirectory "k8k55" containing: the software source, the script of compilation and the scripts of start-stop permitting to make operate the cards k8055.
- A subdirectory "k8k61" containing: the software source, the script of compilation and the scripts of start-stop permitting to make operate the cards k8061.
- A subdirectory "x10" containing the scripts of start-stop permitting to make operate the CM11A interfaces.
- A subdirectory "motion" containing: the scripts of start-stop permitting to make operate the software "motion", the scripts relay that are executed when a detection of movement appears.
- A subdirectory "compteur electrique" containing the scripts of start-stop permitting to make operate the software "stantor_teleinfo".

NOTA BENE: These subdirectories capable to be implemented in the tree structure /usr/local/ of the distant microcomputer.

The directory "pages_web_icons" contains :

- Of the subdirectories containing "stantor_pages_XXXX" of examples of the pages HTML, cHTML (i-mode), XHTML permitting (WAP 2) to consult and to amend information of the Stantor database through navigators (IE, Netscape, Firefox, Safari, etc...) or micro-navigators for cell phone and PDA (OpenWave,...). Some pages WEB use the AJAX technology (XMLHttpRequest functions,...) to animate in a permanent way the information that there is contained.
- Of the subdirectories containing "web2_template_XX" of the examples of pages diagrams WEB under vectorial shape. These pages use the XML / SVG norm for the representation of the diagrams and Ajax for the animation in real time of the objects (rectangles, circles, etc...). Plug-in necessary for IE.
- Of the subdirectories containing "stantor_icons_web, stantor_icons_imode, stantor_icons_xhtml" the pictures and files used by the mentioned above pages. NOTA BENE: These directories must be accessible in writing for the automatic generations of the pictures and files by the programs.

NOTA BENE: These pages and these icons being to implement in the tree structure of the server WEB (Apache) of the central server (example : /var/www/html/stantor_pages_web/ and /var/www/icons/stantor_icons_web/).

The directory "progiciels_divers" (various software packages) contains :

- Of the specific subdirectories for every package used on the central server or on a distant equipment.

In the case or the distribution of Linux doesn't include an used package by Stantor it is necessary to follow the install procedure of the editor in question.

The directory "stantor_equipement_distant_serveurs_soap" contains:

- A subdirectory for soap server containing : the module software allowing this equipment (distant microcomputer) to behave like a server (to the sense WEB services) for the different materials that are connected it and a text file "read-me".
- A subdirectory of library.
- In the subdirectory "serveur_soap_x10", a file of configuration for the server soap x10 in order to reach the software "heyu."

NOTA BENE: These directories being to implement in the tree structure of the server WEB.

(example with Apache: /var/www/html/stantor_equipement_distant_serveurs_soap/).

The directory "stantor_v06XX_equipement_distant_client" contains :

- A subdirectory for soap customer containing : the module software allowing this distant microcomputer to behave like a customer (to the sense WEB services) and a text file "read-me". In this setting these modules send to one or several central servers of the characteristic events as alarms / states or an alteration of IP address.
- A subdirectory of library.
- A subdirectory includes the scripts of start-stop of these processes. These scripts are to amend according to the retained usage.

NOTA BENE: These directory being to implement in the tree structure of the distant microcomputers

(example : /usr/local/stantor_v06XX_equipement_distant_client/).

The directory "stantor_v06XX_systeme_central_applicatif" contains :

- A subdirectory for soap customer "client_soap_XXXX" containing the modules software allowing this central server to inquire the services WEB implemented in the distant microcomputers (Nota bene: by parameterization it is possible to make operate Stantor with several distant microcomputers having each several materials).
- A subdirectory "programme_php_base" containing the modules software functioning permanently and having for role to perform some actions according to the present information in the Stantor database (example: timer, program start, mailing of e-mail, etc...).

- A subdirectory "programme_php_base_compil" containing the modules software, in the form of programs PHP to be compiled, functioning permanently and having for role to perform some actions according to the present information in the Stantor database (example: timer, program start, mailing of e-mail, etc...).
- A subdirectory "programmes_php_enr_base" containing the modules software permitting to record in the Stantor database : digital data, analogical data, motion data and internal data with date.
- A subdirectory "programmes_php_enr_base" containing the modules software, in the form of programs PHP to be compiled, permitting to record in the Stantor database : digital data, analogical data, motion data and internal data with date.
- A subdirectory containing "programmes_php_exemple" of the examples of free standing programs using the information of the Stantor database.
- A subdirectory of library.
- A subdirectory of library, in the form of programs PHP to be compiled. .
- A subdirectory of scripts of start/stop of the central system. These scripts are to amend according to the retained usage.

NOTA BENE: This directory being to establish in the tree structure of the central microcomputer.(example: /usr/local/stantor_v06XX_système_central_applicatif/).

The directory "wsdl_stantor_central" contains :

- The files "wsdl "describing the web services accessible by the central system.

NOTA BENE: This directory being to implant in the arborescence of a microcomputer proxy

(example with Apache : /var/www/html/wsdl_stantor_central/).

The directory "wsdl_stantor_equipement" contains :

- The files "wsdl"describing the web services accessible by the distant microcomputers.

NOTA BENE: This directory being to implant in the arborescence of a microcomputer proxy

(example with Apache : /var/www/html/wsdl_stantor_equipement/).

2 Description of the implementation

Stantor requires the preliminary installation of the following servers and software on the or the microcomputers concerned:

- 1 server WEB Apache on every distant microcomputer,
- 1 server WEB Apache on the central microcomputer ,
- 1 database server mySQL on the central microcomputer or on the server

dedicated to the database.

- The software PHP as CGI or module Apache on every distant microcomputer and on the central microcomputer.
- The software PHP as CLI on every distant microcomputer and on the central microcomputer.

In a concrete way an installation can consist of the following phases:

Phase 1:

- The setting up of a service WEB on a distant microcomputer supporting the K8000 card with the scheduler of the card k8000.
- The setting up of a service WEB on a distant microcomputer supporting the K8055 card with the scheduler of the card k8055.
- The setting up of a service WEB on a distant microcomputer supporting the K8061 card with the scheduler of the card k8061.
- The setting up of a service WEB on a distant microcomputer supporting the CM11A (X10) module.
- The setting up of a service WEB on a distant microcomputer supporting the Webcams.
- The setting up of a service WEB on a distant microcomputer supporting the sound card.
- The setting up of a service WEB on a distant microcomputer supporting the electricity meter.
- The setting up of the WSDL pages on the servers respective proxy (K8000, K8055, K8061,X10, Video, Audio,).

Phase 2:

- The setting up of the programs client K8000 of Stantor on the microcomputer supporting the central system.
- The setting up of the programs client K8055 of Stantor on the microcomputer supporting the central system.
- The setting up of the programs client K8061 of Stantor on the microcomputer supporting the central system.
- The setting up of the programs client CM11A of (X10) Stantor on the microcomputer supporting the central system.
- The setting up of the programs customers Vidéo of Stantor on the microcomputer supporting the central system.
- The setting up of the Audio client programs of Stantor on the microcomputer supporting the central system.
- The setting up of the programs client Electricity meter of Stantor on the

microcomputer supporting the central system.

- The setting up of the basic programs and programs examples or specific of Stantor on the microcomputer supporting the central system. For the basic programs and for the programs of recording, it is possible to choose either the standard version or the version compiled by the Roadsend compiler (C).

Phase 3:

- The setting up of a service WEB of receipt of the events (digital inputs k8000) on the central microcomputer supporting the access in the Database Stantor.
- The setting up of a service WEB of receipt of the events (digital inputs k8055) on the central microcomputer supporting the access in the Database Stantor.
- The setting up of a service WEB of receipt of the events (digital inputs and alert status k8061) on the central microcomputer supporting the access in the Database Stantor.
- The setting up of a service WEB of receipt of the events of detection of movements on the central microcomputer supporting the access in the Database Stantor.
- The setting up of a service WEB of receipt of the events of warning of going beyond of contractual demand on the central microcomputer supporting the access in the Database Stantor.
- The setting up of the client program of broadcast of events (digital inputs K8000) of Stantor on the distant microcomputer supporting the K8000 card.
- The setting up of the client program of broadcast of events (digital inputs K8055) of Stantor on the distant microcomputer supporting the K8055 card.
- The setting up of the client program of broadcast of events (digital inputs and alert status K8061) of Stantor on the distant microcomputer supporting the K8061 card.
- The setting up of the client program of broadcast of the event of IP address alteration on the distant microcomputer (case of the access provider changing Internet the IP address to every enabling or regularly).
- The setting up of the client program of broadcast of events of warning of going beyond of contractual demand of Stantor on the distant microcomputer supporting the electricity meter.
- The setting up of the WSDL page on the server proxy supporting the access in the Database Stantor.

Phase 4:

- The setting up of the pages WEB, I-mode, xHTML-MP and Wap on the central microcomputer supporting a server WEB Apache (or equivalent).

3 Lists of the installation links hypertext

The installation of Stantor_v06 under Linux consists of several operations to perform according to the used material (Card K8000/K8055/K8061, X10, Video, Audio,):

- [the installation of the card of acquirement of the inputs/outputs K8000,](#)
- [the installation of the card of acquirement of the inputs/outputs K8055,](#)
- [the installation of the card of acquirement of the inputs/outputs K8061,](#)
- [the installation of the module issuing X10 of CM11A type,](#)
- [the installation of the connection with a electricity meter,](#)
- [the installation of the packages necessary to the performance of Stantor,](#)
- [the installation of the database of source of Stantor in a basis mySQL,](#)
- [the installation of the scheduler of the K8000 card,](#)
- [the installation of the scheduler of the K8055 card,](#)
- [the installation of the scheduler of the K8061 card,](#)
- [the installation of the software X10 of CM11A type,](#)
- [the installation of the software of electronic electric meters "blue",](#)
- [the installation of the programs written in PHP of Stantor: basic programs and specific programs,](#)
- [the installation of the pages html, chtml \(I-mode\), xHTML \(Wap 2\) and wml \(Wap 1\) with the corresponding icons in the directories of the server WEB Apache,](#)
- [the installation of the video,](#)
- [the audio installation,](#)
- [the installation of the recuperation of the IP addresses and the states of the distant microcomputers.](#)

The [launching of the Stantor](#) application takes place since the phases of installation finished by specialized scripts of launching (and of stop).

4 Installation of the K8000 acquirement card

The installation takes place according to the recommendations of manufacturer "Velleman." The card is configured for Stantor v06 in 8 digital outputs on the IO: 0 < - > 7 and 8 digital inputs on the IO: 8 < - > 15. It contains besides 4 analogical - numeric

inputs and 8 numeric-analogical outputs of range 0-63 and 1 numeric – analogical output of range 0-255. The different types of adjusting of the sensors and actuators to the K8000 card are described in the documentation of the builder.

5 Installation of the K8055 acquirement card

The installation takes place according to the recommendations of manufacturer "Velleman." The card contains: 8 digital outputs, 5 digital inputs, 2 counters on the two first digital inputs, 2 analog – numeric inputs, 2 numeric - analog outputs. The different types of adjusting of the sensors and actuators to the K8055 card are described in the documentation of the builder. This card requires the installation of the library "libusb."(version 01XX - cf the documentation of the package) and lm (mathematical library).

6 Installation of the K8061 acquirement card

The installation takes place according to the recommendations of manufacturer "Velleman." The card contains: 8 digital outputs, 8 digital inputs, 8 analog – numeric inputs, 8 numeric - analog outputs, 1PWM output. The different types of adjusting of the sensors and actuators to the K8061 card are described in the documentation of the builder. This card requires the installation of the library "libusb."(version 01XX - cf the documentation of the package).

7 Installation of the X10 module marks CM11A

The installation takes place according to the recommendations of the editor of the module "Heyu". The adjusting of the CM11A module takes place directly on the serial port of the microcomputer without configuration of this material. However the modules receiving X10 must be to configure to the level of their addresses in conformity with the used configuration of the database (address "home" : A, B, C until P and code : 1 until 16).

8 Installation of connection with an electronic electric meter of “blue” type

Connection to the electric meter is carried out via a RS232 cable and an interface board. This interface allows an opto-electronic decoupling (cf the specialized Web sites and recommendations of the distributor of electricity or the manufacturer of the meter), it is localised between the connector block “teleinformation client” of the electronic electric meter and cable RS232 even connected itself to the port COM of the microcomputer.

Caution: the installation of this interface and this interface must be in conformity with

the regulation imposed by the distributor.

9 Installation of the general packages

The distributions of Linux often install automatically the main packages necessary to the performance of Stantor v06. Following the distribution the procedure can be different. Below some details or auxiliary comments.

9.1 Apache

Included procedure in standard in most distributions :

- To install the module php5.
- To protect the access to the web site on the central microcomputer as on the or the microcomputers of the facilities by an authorization in the /etc/httpd/conf/commonhttpd.conf file or httpd.conf while inserting for example:

Setting access rights to the Web server (files: htaccess, htpasswd).

Sample:

```
<Directory />
```

```
AuthUserFile /var/www/ok_users/auth_web
```

```
AuthType Basic
```

```
AuthName Authentication
```

```
<Limit GET POST>
```

```
require valid-user
```

```
</Limit>
```

```
</Directory>
```

- The directory servers have a sample file .htaccess to protect access to Web services by login and password.
- To create the directory of authorization mentioned /var/www/ok_users/,
- Creation of the authorization file by the command in the directory: htpasswd -c /var/www/ok_users/auth_web stantor (stantor being identifying it), then to capture the lock code and its confirmation,
- to attach the types MIME of the Wap (for Stantor) in the /etc/httpd/conf/commonhttpd.conf file (or the mime.types file) if these types don't exist :

```
AddType application/x-httpd-php .wml
```

AddType application/x-httpd-php3 .wml

AddType text/vnd.wap.wmlscript .wmls

AddType text/vnd.wap.wmlscriptc .wmlsc

AddType text/vnd.wap.wml .wml

AddType image/vnd.wap.wbmp .wbmp

AddType Application/vnd.wap.wmlc .wmlc

AddType Application/vnd.wap.wmlscriptc .wmlsc

- to index the Includes option for the directory html in the "/etc/httpd/conf/httpd.conf" file,
- to start the demon httpd by the command: Apachectl restart (or stop then start) in the directory /usr/sbin,
- To verify through a navigator (url=http://localhost /) that the server operates (attention to the permissions to put on the /www directories and /ok_users).

9.2 *mySQL (version binaire RPM)*

Included procedure in standard in most distributions,

- to verify the performance of database by the commands mysqladmin version,
- to change the lock code root (of mysql) by the command: mysqladmin - uroot password 'foo',
- to install the pack mysql_developpement.

NOTA BENE: the database mySQL is not useful on the distant microcomputers supporting the card k8000/k8055/k8061, the CM11A module, the Webcams and the sound card.

9.3 *PHP*

The installation of PHP is useless if it has been performed in a Dynamic way by the used distribution like module Apache .

CAUTION: An installation of PHP in "cli" is necessary for the PHP programs functioning in command lines on the distant microcomputers and central microcomputers. To create a php-cli.ini file.

CAUTION: The parameter "memory_limit" in php.ini must be carried to a value of 128M but some scripts ask a lot of memory. The parameters of delays (time_out) are to adjust according to the constraints of the network used.

9.4 *phpMyAdmin*

- To decompress the archive in the /var/www/html (directory of the pages html of the distribution),
- to change the users and password in ("root" and "foo") the config.inc.php file,
- to put "english" possibly to the line: require (english...) in the config.inc.php file,
- to verify the access to the index.php page while using a navigator.
- to protect the access of the directory supporting this software so that it is accessible that by users or the named microcomputers (example: access in "localhost" only).

9.5 *Webmin (optional)*

Included install procedure in standard in most distributions,

- to verify if the distribution installed the package otherwise,
 - * To decompress the archive in the directory /usr/local,
 - * to start the setup.sh file and to follow the procedure to the screen of the terminal with the default values of which the port: 10000,
 - * to put in login "xxx" and in password the same that root for example.

The call to webmin takes place with the URL: "https://name_of_server:10000". By default the login and the password, in the distribution, are those of the user root.

9.6 *GNUplot (plotter of curve)*

- Included install procedure in standard in most distributions.

Caution: some versions of GNUplot don't produce any files to the format indispensable GIF in I-mode.

- to verify if the installation took place while starting gnuplot.

9.7 *Converter of format jpeg - > wbmp or pbm - > wbmp for the WAP pictures*

- To install from the ImageMagick_xx.tar.gz file or RPM of the Linux distribution (Package ImageMagick).

9.8 *Postfix - E-mail*

- Included install procedure in standard in most distributions.

9.9 *XMPP - Instant messaging*

- To create an account near the Jabber server. The /etc/stantor_sendxmpp.conf file

must contain the name of Jabber server with the port, the identifier and the password of the account transmitting instant messaging.

9.10 Gammu- SMS messaging

- The package Gammu can send SMS messages when the system's central Stantor is connected to a mobile phone via a USB link or a serial link. The installation procedure Gammu comes with the package. The package Gammu and Wammu is included in most distributions.

9.11 Possible installation of a second Ethernet card for an ADSL connection with the WEB server

Example:

- to put an IP address of gateway, example: "192.168.xx.01",
- to verify the presence of the two Ethernet cards by the command `ifconfig` as well as the different IRQ for every card (to verify at the time of the launching of the BIOS),
- to allow the routing by the server in: `linuxconf` - > routing and gateway then button "enable routing", and to boot the computer,
- to verify that the software ptp is installed (example: file `adsl` `alcatel` to the format `ptp`),
- To put in the files `/etc/ppp/options` and `/etc/ppp/pap-secrets` the corresponding parameters (name and password).

9.12 Installation of the package OpenOffice 3

This package OpenOffice 3 is usable for the configuration of the database. It functions under Linux and under Windows. (cf specific documentation of the package).

10 Installation of the database of source of Stantor in a basis MySQL

- to create a database stantor (to use the package phpMyAdmin for example).
- to import a database by the command (to capture in a terminal) :
 - `mysql -u nom_utilisateur -p name of the basis < nom_du_fichier_de_sauvegarde_à_importer,`
 - example: `mysql -u root -p stantor < /stantorv06_distribution/base_de_donnees_exemple/stantor_backup_XX.sql`
- to verify the presence of the tables of stantor while using phpMyAdmin for example,

- to put the privileges in the tables "db" and "to use", in particular to put function "password" in the relative field to the capture of the password,
- to capture in a terminal commands it: mysqladmin reload in order to return the efficient rights.
- The login and the password contained in /etc/stantor_central_bdd.conf file must correspond to those of the data base mysql.

The configuration of the information of the database takes place by an interactive capture in the tables of the Stantor basis while using a tool like phpMyAdmin, Webmin etc.. or while using the configurator under OpenOffice 3.

Caution :

- not to amend the names of the identifying (first alphabetic characters ex: eca, sodig,...) of the registrations in the different tables,
- to amend the names and labeled in the registrations of the different tables according to the needs,
- not to amend the type of the fields (char, integer, etc..),
- not to amend the default values.
- The parameterization of the database can be performed since this finished operation.
- The manual of parameterization as well as the configurator specifies the significance of the different tables and the different fields of the database.

11 Installation of the Scheduler of the K8000 card of Stantor

The application treating the card electronic K8000 consists of the i2C_k8000.c file, the scheduler_k8k_vxxx.c file and the file i2c_k8000.h headline. These files are localized in the directory "k8k", The script of compiling generated the run file in the /usr/local/bin. directory

Attention: the program stantor_scheduler must belong to "root." These programs can be used with IDE (KDevelop, Anjuta, etc...) subject to the respect of the options mentioned in the scripts of compiling. The set of the parameters that must be provided to this application is indexed in the script of launching of the scheduler (stantorv06_scheduler_k8k_on.sh). This script can be started automatically under rcd.local. Description of the call parameters:

- Frequency of scrutation of the card in microseconds (example: 100000).
- Value of the port printer (example: 1).
- Loop of waiting of the I2C bus (example: 6000 for a processor to 1GhZ).
- Absolute name of the index where the files of data are localized (example: /var/tmp/k8000). The files of data being: k8000ed.data, k8000ea.data k8000sd.data,

k8000sa.data.

- Value of the debouncing filters of the 8 digital inputs in the increasing order with:

0 = not of debouncing filter.

1 = 1 cycle of scrutation, either 2 successive identical states.

2 = 2 cycles of scrutation, either 3 successive identical states.

3 = 3 cycles of scrutation, either 4 successive identical states.

With 1 parameter for every digital input.

- Parameters of calculation of deletion of the points of aberrant analogical measures by selection of the median value.

0 = not of deletion of the aberrant measures,

1 = selection of the median value of the last 3 measures,

2 = selection of the median value of the last 5 measures,

3 = selection of the median value of the last 7 measures.

With 1 parameter for every analogical input.

Caution: a too weak value of the loop of waiting of the I2C bus disrupts the working of the card if the frequency of the CPU is raised.

Caution to the rights of access on the files of data (rights of writing and reading imperative to position according to the installation).

The files of data are :

- k8000ed.data, file text representing the digital entries.

- k8000ea.data, file text representing the analogical entries.

- k8000sd.data, file text representing the digital exits.

- k8000sa.data, file text representing the analogical exits or regulating.

#NOTA BENE: the 2 switchs on the card k8000 must be positioned to 0 (A0 switches and A1 of SW1 to 0).

Example of launching control:

```
/usr/local/bin/stantor_scheduler_k8k 150000 1 8000 /var/tmp/k8000 0 3 0 1 2 0 0 1 3 3  
3 0 &
```

The initialization of the digital outputs and the numeric outputs is done on the basis of the last values stocked in the k8000sd.data files, k8000sa.data. A file "lisez-moi" (=read_me) specifies these conditions.

The eight arguments (debouncing filters) permit to wait that the digital input is

consolidated during "n" cycles of scrutiny before writing the change of state in the k8000ed.data file.

The last four arguments (1 parameter by analogical input) permit to select the slippery median value of the $2n+1$ values in order to eliminate the parasitic values before writing in the k8000ea.data file.

12 Installation of the Scheduler of the K8055 card of Stantor

The application treating the card electronic K8055 contains the scheduler k8k55_vxxx.c file and the files of the library libusb and lm. These files are localized in the directory "k8k55". The script of compiling generate the run file in the /usr/local/bin directory. Attention: the program stantor_scheduler must belong to "root." These programs can be used with IDE (KDevelop, Anjuta, etc...) subject to the respect of the options mentioned in the scripts of compiling.

The set of the parameters that must be provided to this application is indexed in the script of launching of the scheduler (stantorv06_scheduler_k8k55_on.sh). This script can be started automatically under rcd.local.

Description of the call parameters :

- Frequency of scanning of the card in microseconds (example: 100000)
- Number of the card (example: 1 or 2 or 3 or 4) among 4 cards managed by Velleman.
(to verify the position of the jumpers sk5 and sk6 on the electronic card).
- Value of the timeout on the card (example: 50) in millisecond.
- Absolute name of the index where the files of data are localized (example: /var/tmp/k8055_c1). The Files of data being: k8055ed.data, k8055ea.data k8055sd.data, k8055sa.data, k8055cd.data, k8055lp.data, k8055status.data).
- Value of the debouncing filters of the 8 digital entries (5 useful) in the order :

0 = not of anti-rebound filtering,

1 = 1 cycle of scanning, either 2 successive identical states.

2 = 2 cycle of scanning, either 3 successive identical states.

3 = 3 cycles of scanning. either 4 successive identical states.

With 1 parameter for every digital input.

- Parameters of calculation of deletion of the points of aberrant analogical measures by selection of the median value.

0 = not of aberrant value deletion,

1 = selection of the median value of the last 3 measures,

- 2 = selection of the median value of the last 5 measures,
- 3 = selection of the median value of the last 7 measures).

With 1 parameter for every analogical input.

- Parameter of selection of the USB link:

I = Mode "Interrupt" – USB 1

B = Mode "Bulk" – USB 2 ,

The directory and the files are created, if the case arises, at the time of the launching of the program.

The files of data are :

- k8055ed.data, file text representing the digital inputs.
- k8055ea.data, file text representing the analogical inputs.
- k8055sd.data, file text representing the digital outputs.
- k8055sa.data, file text representing the analogical outputs or regulating.
- k8055cd.data, file text representing the counters of pulses.
- k8055lp.data, file text representing the widths minimum of impulse for the counters.
- k8055status.data, file text representing the state of working of the card with value : 0=OK, 1=initialization in progress, .2=Material out of order.

Caution: to the rights of access on the files of data (rights of writing and reading imperative to position according to the installation).

Nota bene: it is necessary to put a scheduler in place for every Velleman card K8055 connected to a microcomputer, with an index for every card.

Example of launching control :

```
/usr/local/bin/stantor_scheduler_k8k55 150000 1 50 /var/tmp/k8055_c1 0 3 0 1 2 0 0 0
3 2 I &
```

The initialization of the digital outputs, the numeric outputs and the widths minimum of impulse of the counters is done on the basis of the last values stocked in the k8055sd.data files, k8055sa.data and k8055cd.data. A file "lisez-moi »(=reads me) specifies these conditions.

The eight arguments (debouncing filters) permit to wait that the digital input is consolidated during "n" cycles of scanning before writing the change of state in the k8055ed.data file.

The last two arguments (1 parameter by analogical input) permit to select the slippery

median value of the $2n+1$ values in order to eliminate the parasitic values before writing in the k8055ea.data file.

13 Installation of the Scheduler of the K8061 card of Stantor

The application treating the card electronic K8061 contains the scheduler_k8k61_vxxx.c file and the files of the library libusb. These files are localized in the directory "k8k61". The script of compiling generate the run file in the /usr/local/bin directory. Attention: the program stantor_scheduler must belong to "root." These programs can be used with IDE (KDevelop, Anjuta, etc...) subject to the respect of the options mentioned in the scripts of compiling.

The set of the parameters that must be provided to this application is indexed in the script of launching of the scheduler (stantorv06_scheduler_k8k61_on.sh). This script can be started automatically under rcd.local.

Description of the call parameters :

- Frequency of scanning of the card in microseconds (example: 100000)
- Number of the card (example: 0, 1, 2, 3, 4, 5,6 ou 7) among 8 cards managed by Velleman.

(to verify the position of the jumpers A1, A2 et A3 on the electronic card).

- Value of the timeout on the card (example: 50) in millisecond.
- Absolute name of the index where the files of data are localized (example: /var/tmp/k8061_c1). The Files of data being: k8061ed.data, k8061ea.data k8061sd.data, k8061sa.data, k8061pwm.data, k8055status.data).

- Value of the debouncing filters of the 8 digital inputs in the order :

0 = not of anti-rebound filtering,

1 = 1 cycle of scanning, either 2 successive identical states.

2 = 2 cycle of scanning, either 3 successive identical states.

3 = 3 cycles of scanning. either 4 successive identical states.

With 1 parameter for every digital input.

- Parameters of calculation of deletion of the points of aberrant analogical measures by selection of the median value.

0 = not of aberrant value deletion,

1 = selection of the median value of the last 3 measures,

2 = selection of the median value of the last 5 measures,

3 = selection of the median value of the last 7 measures).

With 1 parameter for every analogical input.

The directory and the files are created, if the case arises, at the time of the launching of the program.

The files of data are :

- k8061ed.data, file text representing the digital inputs.
- k8061ea.data, file text representing the analogical inputs.
- k8061sd.data, file text representing the digital outputs.
- k8061sa.data, file text representing the analogical outputs or regulating.
- k8061pwm.data, file text representing the PWM outputs.
- k8061status.data, file text representing the state of working of the card with value :

Value of the 1 st byte 0=OK, 1=initialization in progress, .2=Material out of order.

Value of the 2 nd byte : 0=OK, 1= 12 V out.

Value of the 3 th byte : 0=OK, 1= bad number of the card.

Value of the 4 th byte: reserved

Caution: to the rights of access on the files of data (rights of writing and reading imperative to position according to the installation).

Nota bene: it is necessary to put a scheduler in place for every Velleman card K8055 connected to a microcomputer, with an index for every card.

Example of launching control :

```
/usr/local/bin/stantor_scheduler_k8k61 150000 1 50 /var/tmp/k8061_c1 0 3 0 1 2 0 0 0  
3 2 0 2 1 0 2 2 &
```

The initialization of the digital outputs, the numeric outputs and PWM output is done on the basis of the last values stocked in the k8061sd.data files, k8061sa.data and k8061pwm.data. A file "lisez-moi »(=reads me) specifies these conditions.

The eight arguments (debouncing filters) permit to wait that the digital input is consolidated during "n" cycles of scanning before writing the change of state in the k8061ed.data file.

The last 8 arguments (1 parameter by analogical input) permit to select the slippery median value of the 2n+1 values in order to eliminate the parasitic values before writing in the k8061ea.data file.

14 Installation of the software X10 of CM11A type

The enabling of the service WEB requires the preliminary installation of the package "heyu." This package must be installed according to the manufacturer's prescriptions. It uses a settings file of which the names of alias must correspond to the identifying mentioned in the database (identifying sodix 0001 for example to sodixXXXX).

A x10.conf file is provided like example.

A script of launching (stantorv06_scheduler_x10_on.sh) permits to make the start of the microcomputer operate the software "heyu." This script can be started automatically for example under rcd.local. To verify that the path of the package "heyu" in the file "stantor_heyu.conf" is in conformity with the installation. A file "lisez-moi" (=read-me) specifies these conditions.

15 Installation of the software of electronic electric meters "blue"

The directory "compteur_electrique" includes the module "stantor_teleinfo.php", scripts of start/stop and the help files. The module "stantor_teleinfo.php" recovers in a cyclic way the informations transmitted by the electronic electric meter and stores this informations in a text file. The file "script_lancement_compteur" includes the parameters of operation of this connection (port of communication, name of the directory and name of the data file, cycles examination of the line series asynchrone). This script can be launched automatically under "rcd.local" for example. A file "read me" specifies these condition of uses.

16 Installation of the programs and written services in PHP

Stantor_v06 provides in standard of the programs using the database MySQL. To install these programs it is necessary to perform the operations of copy follow :

The installation of a distant or remote microcomputer consists (X representing the version) :

- To recopy the directory "stantor_equipement_distant_serveurs_soap" of the distribution file in the index / var / www / html / and to suppress the servers unused soap.
- To recopy the directory "stantor_v06XX_equipement_distant_client" of the distribution file in the / usr index / local / .et to suppress the client unused soap.
- In the case of the use of a proxy for the services web to recopy the directory "wsdl_stantor_equipement" in the directory /var/www/html/ of the server proxy and to suppress the files unused "XXX.wsdl". If the proxy is used attention then to the line < soap:address renting that specifies the address of the server soap that is necessary to address the information.
- To recopy the stantor_equip_1.conf files, stantor_k8k_c1.conf,

stantor_k8k55_c1.conf, stantor_k8k61_c1.conf, stantor_motion_d1-4.conf in /etc according to the case. The names of these configuration files must correspond to the names used on the script of start.

The installation of the programs of a microcomputer central system consists according to the case to :

- To recopy the directory "stantor_système_central_serveurs_soap" of the distribution file in the index /var/www/html/ and to suppress the unused servers soap.
- To recopy the directory "stantor_v06XX_système_central_applicatif" of the distribution file in the /usr/local/ and to suppress the unused client soap and modules. In the event of use of the compiled version of programs PHP it is necessary to read the instructions given by the files "read-me.txt" in order to obtain these programs in the form of binary code.
- In the case of the use of a proxy for the services web to recopy the directory "wsdl_stantor_central" in the index /var/www/html/ of the server proxy and to suppress the files unused "XXX.wsdl". If the proxy is used attention then to the line < soap:address renting that specifies the address of the server soap that is necessary to address the information.
- To recopy the stantor_central_bdd.conf file and stantor_xmpp.conf in the directory /etc .

Caution: the access rights to the directories and files must be adapted to the measures of security of every site.

17 Installation of the examples of the pages html, Web2 (Ajax), Web2 Mobiles, xhtml-mp (Wap 2.x), chtml (I-mode) with their icons

- Following the case, to recopy the directories "stantor_pages_web", "stantor_model_web2", "stantor_web2_iphone", stantor_pages_xhtml", "stantor_pages_imode", in the directory corresponding "html" of the server Apache (example /var/www/html/stantor_pages_web).
- Following the case to recopy the directories stantor_icons_web, stantor_icons_xhtml, stantor_icons_wap, stantor_icons_imode in the directory corresponding "icons" of the server Apache (example: /var/www/icons/stantor_icons_xhtml).
- To put the rights of writing for the stantor_input1.txt files, stantor_input2.txt, stantor_fichier_plot_en_num.data and stantor_fichier_plot_en_digi.data.

The files of parameters of the pages html, xhtml, imode is :

- stantor_parametre_base.inc.php: it specifies the parameters of access to the

database stantor (name, login, password,),

- `stantor_parametre_gene.inc.php`: it specifies the used style sheet and the identifying of the information contained in the database that must be displayed or treated by these pages.

The choice of the style sheet takes place as replacing the name of the style sheet by another in the variable "\$style" and applies itself to the game of pages in question.

The creation of specific style sheets is possible while amending or while creating a "xxx.css" file.

CAUTION: The parameters of access to the basis "host", "user" and "password" must correspond to those definite in the Mysql database. The access paths (ex: GNUplot) must correspond to the installation performed for this package.

Nota bene: the module of conversion permits to achieve different conversions of numerical quantities. The usable parameters by these algorithms are in the registering of the table `conv_numerique` (coef_a, coef_b, etc..).

18 Installation of the video

The program of management of the video contains in the distant microcomputer:

- The software package of capture of picture on line command "motion" that allows an automatic starting of the video the launching of the microcomputer and that provides periodic way a JPEG picture in a file (example: `/var/tmp/motion/lastsnap.jpg`).
- The software package of movement detection "motion".(4 possible detectors - cameras).
- The WEB service of transfer of files, side server, permitting to transfer the pictures in an index of the server Apache of the central microcomputer (example: `/var/www/icons/stantor_icons_web/stantor_video.jpg`).
- The client SOAP permitting to transmit the alert of movement detection in the basis of data of the central microcomputer.

A `motion.conf` file is provided in example.

A script of launching (`stantorv06_motion_on.sh`) permits to make function automatic the software "motion." This script can be thrown automatically for example under `rcd.local`.

- To verify that the names of the scripts relay are written in the file of "motion" configuration.
- To verify that the files interfaces have rights of sufficient access for programs them customers and server SOAP.
- To verify that the name of the file picture in the data base corresponds to the one generated by the program "motion."

A file "reads me" specifies these conditions of installation of the customer and server SOAP of transfer of files.

A files "read me" specify the conditions of installation of the customer and server SOAP of detection of movement and management of alert by the program motion.

19 Audio installation

The file recovery of the sounds emitted by microphones requires the package « sox »:

- A package of recording ("rec") that must be parameterized by hand to provide a permanent length file according to the features of the sound card and the possibilities of the materials.
- The setting up of the file transfer service WEB, in the directory of the server Apache, permitting to reach these files its.

A script of launching (stantorv06_scheduler_audio_rec_on.sh) permits to make function automatic the software "rec" to the start of the microcomputer. This script can be started automatically for example under rcd.local.

The sound file diffusion to loudspeaker (or earphone) via a sound card requires:

- A package of diffusion ("play") that must be parameterized by hand according to the features of the sound card and the possibilities of the materials.
- the setting up of the file transfer service WEB, in the directory of the server Apache, permitting to receive these files its.
- A script of launching (stantorv06_scheduler_audio_play_on.sh) permits to make function automatic the software "play" to the start of the microcomputer.

The tables "son_micro" and "son_parleur" of the database specify the paths of the files sound respectively on the distant equipment and on the central system that is used by the server Apache.

Caution: The programs ARTS or ESD must be stopped because they do not allow the operation of the modules of "sox" (locked resource).

A file "lisez-moi" (= read-me) specifies these conditions of installation of the customer and server SOAP of file transfer.

20 Installation of the mechanism of recuperation of the IP address and the state of the distant microcomputers

- The recuperation of the states of the distant microcomputers takes place by:
- the installation of the service web "serveur_soap_gestion_equipement" on this equipment.
- the installation of the customers on the central microcomputer. The client "stantor_soap_client_status_equipement.php" to provide the state, the horadate

and the message in progress. The client

"stantor_soap_client_status_equipement.php" that provides the result of the command "sensors."

- The client "stantor_soap_client_reboot_equipement.php" and "stantor_soap_client_halt_equipement.php" permit to make a start/stop or a remote stop of the equipment distant microcomputer mentioned in parameter.
 - A file "lisez-moi" (= read-me) specifies these conditions of installation for the mentioned above directories.
-

21 Installation of the transmission system of dynamic address IP of the central system

When the microcomputer of the central system has a variable address IP, it is possible automatically to transmit it towards a Web page of a fixed address server. This mechanism of redirection thus makes it possible to reach the Web pages of the central system Stantor even if the supplier of access Internet in exchange regularly address IP. The installation requires:

- an account (login/password) and a directory on the server of the supplier of access with the right of writing.
 - the update of the data base with these parameters (cf handbook of parameter setting).
-

22 Start / Stop of Stantor v06

- According to the distribution of the applications on the microcomputers and servers the following tasks are to perform on the respective facilities:
- to verify that the server Apache functions on the or the servers supporting the demon "httpd",
- to verify that the database mySQL functions on the server supporting the demon "mysqld",
- a script

`"/usr/local/stantor_v06XX_equipement_distant_client/scripts_marche_arret_equipement_distant/stantor_marche_distant.sh"`

provides an example of initiating procedure of the programs installed on a distant microcomputer. It is necessary to comment or to uncomment some lines according to the configuration chosen on this microcomputer. This script of launching of Stantor on distant equipment is automatically for example executable to the start from rc.d/rc.local.

- a script

`"/usr/local/stantor_v06XX_système_central_applicatif/scripts_marche-arret_stantor_central/stantor_linux_v06_on.sh"`

on the central server (customers SOAP and other basic programs or specific

programs) provides an example of initiating configurable procedure. It is necessary to comment or to uncomment according to the chosen configuration. This script of launching of Stantor on the central server is automatically for example executable to the start from rc.d/rc.local.

- a script

```
"/usr/local/stantor_v06XX_système_central_applicatif/scripts_marche-arret_stantor_central/stantor_linux_v06_on.sh"
```

on the central server (customers SOAP and other basic programs or specific programs) provides an example of procedure of auto launch all processes that have information in the database. It is necessary to comment or to uncomment according to the chosen configuration. This script of launching of Stantor on the central server is automatically for example executable to the start from rc.d/rc.local.

- a script

```
"/usr/local/stantor_v06XX_système_central_applicatif/scripts_marche-arret_stantor_central/stantor_linux_v06_compil_on.sh"
```

on the central server (customers SOAP and other basic programs or specific programs) provides an example of initiating procedure (compiled version of certain programs PHP). It is necessary to comment or to uncomment according to the chosen configuration. This script of launching of Stantor on the central server is automatically for example executable to the start from rc.d/rc.local.

- To consult the files of trace of Stantor localized v06 in /var/log/syslog in order to determine the possible abnormalities.
- The scripts of stop of the schedulers "stantor_marche_arret" and "stantor_linux_v06_off" are provided for the distant server and central server, they permit "kill" the different processes bound to the Stantor applicatifs. It is necessary to comment or to uncomment some lines according to the chosen configuration.

23 Important various informations

- In case of use of SELinux (Security Enhanced linux) it is possible to use the command line " chcon - R - t httpd_sys_content < path to web lines > " to allow servers SOAP to reach the k8000ed.data files, k8055ed.data, k8061ed.data, k8000sd.data etc...
- According to the protective levels of the distant microcomputers it is possible to position the Setuid bit on the executable programs as "heyu", "sensors", etc...
- Symbolic tlinks toward executable programs can be used in servers calling SOAP these programs (cf the scripts of launching).
- It is preferable to use the same version of PHP and PHP-SOAP on the distant microcomputers and on the central server.
- In install scripts it is possible to select a RAMDISK can be used for the directory "/var/tmp/stantor/". The mount is done by the script to launch the distant computer.

- **Caution:** When using IPv6, verify that the versions of PHP (and the native library PHP-SOAP) support this protocol.

Good luck with STANTOR v06