



LTE Callbox Series and UE Simbox Series

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1 Introduction

1.1 General description.

This document describes the basic steps to start using your Amarisoft LTE Callbox or UE Simbox. It is a brief tutorial on how to setup and access your PC, where to find software and how to change configuration files. For advanced use, please refer to user manuals and application notes.

All delivered PCs are installed with Fedora 28 Linux distribution. We assume basic knowledge of Unix system at user level. Graphical user interface is disabled on all Amarisoft products. You can connect to the PC using SSH command in Linux. If you are accessing PC from a Windows environment, you can use PuTTY client (<http://www.putty.org/>).

Please note that installing or running other programs on the PCs may have an impact on the performance of the system.

There are 2 accounts created in PC. The administrator account credentials has **root/toor** as login/password. There is also a user account with **user/resu** as login/password. The Amarisoft software suit is installed and executed under **root** account.

1.2 Initial Setup

Depending on your purchased product, you may have several PCIe cards. A single PCIe card can handle MIMO 2x2, so the TX1 and TX2 correspond to the 2 layers of MIMO. The following

image describes the SMA connectors of the PCIe card:



First thing to do is to plug the power supply and to connect the provided antennas to the SMA connectors of the PCIe cards. You will find 4 antennas per PCIe SDR card in the box to be connected to TX1, RX1, TX2 and RX2 connectors for over the air tests. You can also connect the PCIe cards to your DUT (Device Under test) via RF cables. In this case, best is to use attenuators at each RF path. The RF cables and attenuators are not provided by Amarisoft.

The PC can be connected to your local network but it is not mandatory.

2 LTE Callbox Series

Amarisoft LTE Callbox series include the following 3 products:

- AMARI LTE Callbox Mini
- AMARI LTE Callbox Classic
- AMARI LTE Callbox Pro

Each of the above products is basically a PC with the following software components installed:

- **lteenb**: This component is a LTE base station (eNodeB).
- **ltemme**: This component is a LTE EPC including MME (Mobility Management Entity), SGW (Serving Gateway), PGW (Packet Data Network Gateway) and HSS (Home Subscriber Server).
- **lteims**: This component is an IMS test server.
- **ltembmsgw**: This component is a LTE MBMS Gateway.
- **trx_<name>**: This component is your radio frontend driver where <name> represents your radio frontend type. Examples are **trx_sdr** for PCIe SDR card and **trx_uhd** for USRP SDR cards.
- **www**: this component is in charge of web interface to Amarisoft LTE software. It allows you to control the software and visualize logs.

Note that each component has a **doc** directory where you can find its documentation as well as some useful application notes. Alternatively, all documentations are available for download in Extranet.

2.1 PC Access

Use **root** / **toor** as login / password to connect to your setup.

2.1.1 AMARI LTE Callbox Mini and AMARI LTE Callbox Classic

The Ethernet interface of the PC is configured with DHCP. If you are not able to have the IP address, then you need to access the PC locally by connecting a monitor and a keyboard to the PC. However, as mentioned before that graphical interface is disabled.

After connecting to the PC, open a terminal and type the following command to retrieve the IP address of the PC.

```
ifconfig
```

Once you know the IP address, you can make a SSH connection in Linux by typing

```
ssh -X root@<IP address>
```

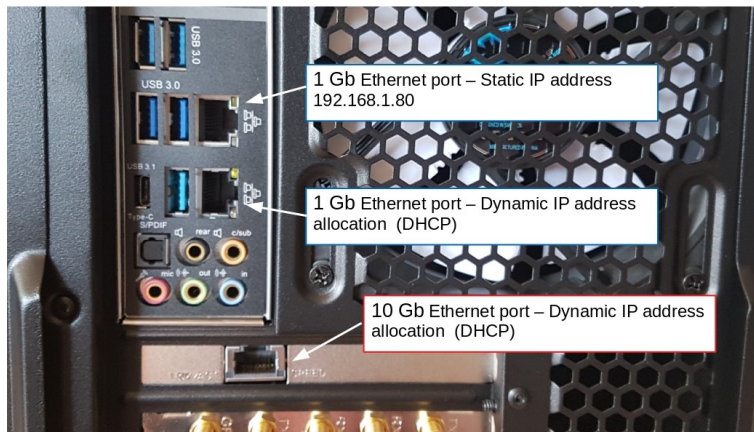
or by using PuTTY at Windows.

2.1.2 AMARI LTE Callbox Pro

The AMARI LTE Call Box Pro does not have a built-in graphical card however you can remotely connect to the callbox by using one of the Ethernet ports.

2.2 Connect your Callbox to the local network

The AMARI LTE Call Box Pro has 3 Ethernet ports: 2x 1Gbps Ethernet port and 1x 10Gbps Ethernet port.



The first one (on the top) is configured with a static IP address 192.168.1.80.

The other ones are in DHCP mode and will get automatically an IP address within the range defined on your router.

To get access to the callbox, there are two options:

- connect the callbox to your LAN via the DHCP ethernet port and figure out in router information the IP address allocated to the callbox.
- connect directly your PC to the callbox ethernet port 192.168.1.80 via ethernet cable. Set your PC ip address to static ip 192.168.1.10 (for example).

Once you are remotely connected, you can modify the static IP address allocated by editing the file `/etc/sysconfig/network-scripts/ifcfg-enp7s0`. Thus, future connections to the Callbox can be made using this static address

Note: 10Gbps Ethernet port must be used when data rate between external IP application and UEs exceeds 1Gbps.

2.3 Login

To login as root, please use **root/toor** as login / password.

There is also a user account with **user/resu** as login/password.

Note: The Amarisoft software suit is installed and executed under root account.

2.4 Web GUI

The web GUI to display logs is available through web access at the following URL:
`http://<IP address>/`

2.4.1 Set a password

To add authentication to the web portal:

Edit `/etc/httpd/conf/httpd.conf` and look for `<Directory "/var/www/html">` section. Inside it, add `AuthConfig` to `AllowOverride` directive so that it becomes `AllowOverride None AuthConfig`.

Then restart HTTP daemon:

```
service httpd restart
```

Create `/var/www/html/lte/.htaccess` file with following content:

```
AuthType Basic
AuthName "Amarisoft Web GUI"
AuthUserFile /etc/httpd/.htpasswd
Require valid-user
```

To add a user and its password, type the following command:

```
htpasswd -c /etc/httpd/.htpasswd <username>
```

2.5 Initial Testing

All Callboxes are configured to provide an automatic LTE service. At each reboot of the PC, LTE network is on with one cell configured in band 7, 20 MHz cell bandwidth and MIMO 2x2. In order to start testing, you just need to power on your UE. It should automatically connect to the LTE network assuming that your UE supports band 7. You may connect the Callbox to a network that has internet access. This will give your UE access to the internet. If your UE is connected to the LTE network, usually you should see a 4G/LTE icon displayed on the monitor, although it depends on UE model.

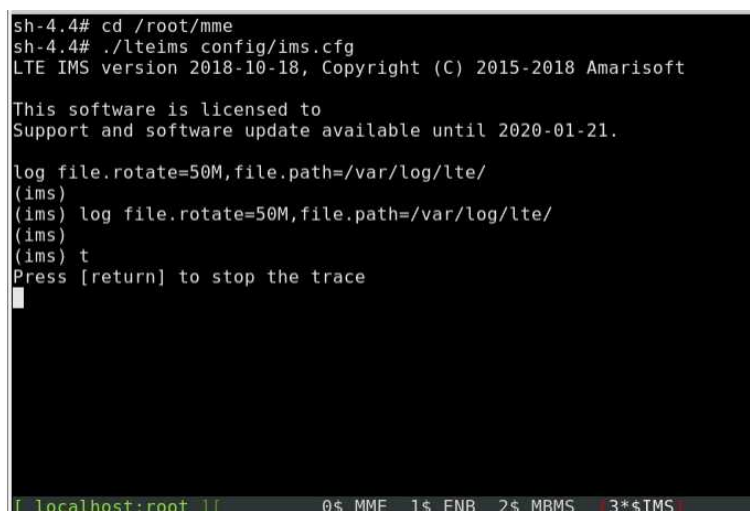
If your UE can't connect despite the fact that it supports band 7, please check your antenna connection. usually when using antennas for over the air testing, the signal level degrades due to interference. In this case, you should configure your system to another band or use a shielded box to avoid interference. Other possibility is to use RF cables between the Callbox and the UE.

2.5.1 Access to software monitors

Once you are logged on your callbox, you can access software components (eNB, MME, IMS or MBMSGW) using screen command:

```
screen -x lte
```

This will connect you to different component monitor.



```
sh-4.4# cd /root/mme
sh-4.4# ./lteims config/ims.cfg
LTE IMS version 2018-10-18, Copyright (C) 2015-2018 Amarisoft

This software is licensed to
Support and software update available until 2020-01-21.

log file.rotate=50M,file.path=/var/log/lte/
(ims)
(ims) log file.rotate=50M,file.path=/var/log/lte/
(ims)
(ims) t
Press [return] to stop the trace
█

[ localhost:root ] [ 0$ MME 1$ ENB 2$ MBMS 3*$IMS ]
```


Next sections show you basic methods. For more information please refer to **screen** documentation (<https://www.gnu.org/software/screen/manual/screen.html>).

2.5.2 Select component

Each component monitor is inside a window. You can switch from a window to another with the command:

```
ctrl+a <window index>
```

Where window index is:

- 0 MME
- 1 eNB
- 2 MBMSGW
- 3 IMS

Note: press simultaneously CTRL key and a key, release them, then press number key.

You can also switch to next window:

```
ctrl+a <space>
```

Each component screen offers a list of commands that can be used either to get status or trigger action. Each of them are documented in the component documentations (example lteenb.pdf) or inline with the "help" command

```

Mate Terminal
File Edit View Search Terminal Help

(ims) help
help          show available commands
log           change the log options
cevent        display event counters
users         show users
unregister    unregister binding
ipsec         Show or flush ipsec contexts
dialog        show dialogs
dialog_stop   stop dialog
mme           show MME connections
cx            show Cx connection
cxconnect     (re)connect to the HSS
cxdisconnect  disconnect from the HSS
rx            show Rx connection
rxconnect     (re)connect to the PCRF
rxdisconnect  disconnect from the PCRF
sms           send sms
sms_flush     Flush pending sms
mt_call       Mobile terminating call
t             activate status display
quit          stop the ims and exit
(ims)

[ localhost:root ] [ 0$ MME 1$ ENB 2$ MBMS 3*$IMS ] [ 25/06/19 1:38 ]

```

2.5.3 Exit screen

```
ctrl+a d
```

2.5.4 Components

All software are installed in **/root** directory.

You may find different version of each component inside

The systems uses symlinks (mme, enb, mbms) that points to a version of each component. You can change those links if you need to change version to use.

Each component has a doc sub-directory where you will find its documentation. It also have a config sub-directory where config files are placed.

2.5.5 Change config

2.5.5.1 Service

The LTE automatic service uses `/root/ots/config/ots.cfg` for its configuration. The format is shell.

The default configuration file is generated during installation. To use your own configuration we recommend to create a new file and change `/root/ots/config/ots.cfg` symbolic link to point to your file. Else, your changes will be overridden at next software install/upgrade.

Example:

Create a `my-ots.cfg` file and put the following inside:

```
# Include default configuration
source ots.default.cfg

# Add your custom config
MME_CONFIG_FILE=/root/mme/config/my-mme.cfg
```

Then:

```
cd /root/ots/config
rm -f ots.cfg
ln -s my-ots.cfg ots.cfg
```

2.5.5.2 Components

The LTE automatic service starts each component with the following config files:

- eNB `/root/enb/config/enb.cfg`
- MME `/root/mme/config/mme.cfg`
- IMS `/root/mme/config/ims.cfg`
- MBMSGW `/root/mbms/config/mbmsgw.cfg`

Please note that these files are symbolic links to real configuration files as depicted below for `enb.cfg`.

```
-rw-rw-r-- 1 user user 6643 Jul  4 16:24 enb-ca.cfg
-rw-rw-r-- 1 user user 6675 Jul  4 16:24 enb-catm1.cfg
lrwxrwxrwx 1 root root   17 Jul  4 16:37 enb.cfg -> mimo-2x2-5mhz.cfg
-rw-rw-r-- 1 user user 5500 Jul  4 16:24 enb.default.cfg
```

In order to change the configuration, you have two options:

- Editing the above files to change the configuration directly.
- Changing the symbolic link to point to another configuration file. Following example shows the commands to change the default config to a carrier aggregation configuration on eNodeB side.

```
cd /root/enb/config
rm enb.cfg
ln -s enb-2cc.cfg enb.cfg
```

Once you have changed your config, you need to restart the LTE service using the following command:

```
service lte restart
```

NB: you may use screen to check that all components are correctly started.

For more details on config files, please refer to each component documentation.

2.5.6 Manage LTE automatic service

2.5.7 Status

You can check the LTE service status this way:

```
service lte status
```

The command will return "active (running)" status if service is running

2.5.8 Stop

You can stop all LTE components this way:

```
service lte stop
```

2.5.9 Start

You can start them again this way:

```
service lte start
```

2.5.10 Disable

You may also prevent them to start at boot time:

```
systemctl disable lte
```

NB: lte service remains enable until next reboot

NB2: this command is not available on Ubuntu version <= 14

2.5.11 Enable

You may enable service at boot time this way:

```
systemctl enable lte
```

NB: lte service remains disable until next reboot

NB2: this command is not available on Ubuntu version <= 14

2.6 Traffic Generation

If you have an external tool to generate traffic, you can usually use the Ethernet ports of the Callbox. In Callbox Mini and Classic, the maximum supported data rate within the cell is 200 Mbps and 600 Mbps. These rates are within the capability of the Ethernet ports of the PC. Callbox Pro however supports 1.2 Gbps hitting the limit of 1Gb capacity of a standard Ethernet port. Recent Callbox pro setups are equipped with an external 10Gb Ethernet card allowing to cope with Gigabit traffic coming from an external tool.

When using an external tool, it is sometimes easier to be able to access the UEs directly bypassing NAT. You can check the following link explaining how to do that:

https://extranet.amarisoft.com/wiki/doku.php?id=info:mme_ue_direct_access

3 UE Simbox Series

Amarisoft UE Simbox series include the following products:

- AMARI LTE UE Simbox 001
- AMARI LTE UE Simbox 064
- AMARI LTE UE Simbox 128
- AMARI LTE UE Simbox 256
- AMARI LTE UE Simbox U

Each of the above products is basically a PC with the following software components installed:

- **lteue**: This component is a LTE UE simulator. It simulates one or more UEs by communicating through a RF system with an eNodeB and core network.
- **trx_<name>**: This component is your radio frontend driver where <name> represents your radio frontend type. Examples are **trx_sdr** for PCIe SDR card and **trx_uhd** for USRP SDR cards.
- **www**: this component is in charge of web interface to Amarisoft LTE software. It allows you to control the software and visualize logs.

3.1 PC access

Use **root** / **toor** as login / password to connect to your setup.

3.1.1 AMARI LTE UE Simbox 001, 064 and 128

The Ethernet interface of the PC is configured with DHCP. If you are not able to have the IP address, then you need to access the PC locally by connecting a monitor and a keyboard to the PC. However, as mentioned before that graphical interface is disabled.

After connecting to the PC, open a terminal and type the following command to retrieve the IP address of the PC.

```
ifconfig
```

Once you know the IP address, you can make a SSH connection in Linux by typing

```
ssh -X root@<IP address>
```

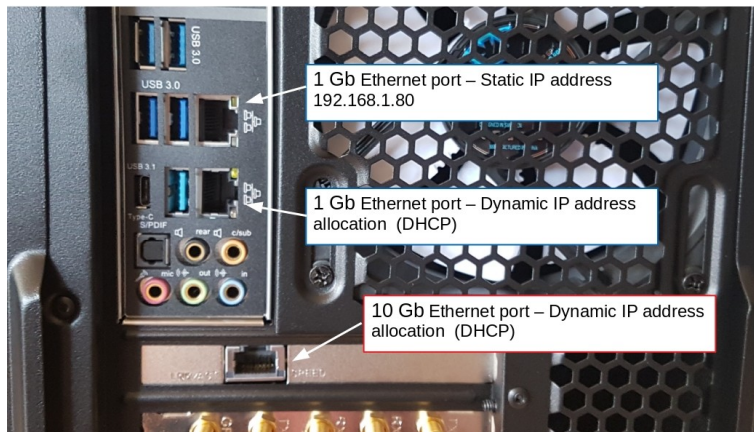
or by using PuTTY at Windows.

3.2 AMARI LTE UE Simbox 256 and AMARI LTE UE Simbox U

The AMARI LTE UE Simbox 256 and AMARI LTE UE Simbox U does not have a built-in graphical card however you can remotely connect to the callbox by using one of the Ethernet ports.

3.3 Connect your Callbox to the local network

The AMARI LTE UE Simbox 256 and AMARI LTE UE Simbox U has 3 Ethernet ports: 2x 1Gbps Ethernet port and 1x 10Gbps Ethernet port.



The first one (on the top) is configured with a static IP address 192.168.1.80.

The other ones are in DHCP mode and will get automatically an IP address within the range defined on your router.

To get access to the callbox, there are two options:

- connect the callbox to your LAN via the DHCP ethernet port and figure out in router information the IP address allocated to the callbox.
- connect directly your PC to the callbox ethernet port 192.168.1.80 via ethernet cable. Set your PC ip address to static ip 192.168.1.10 (for example).

Once you are remotely connected, you can modify the static IP address allocated by editing the file `/etc/sysconfig/network-scripts/ifcfg-enp7s0`. Thus, future connections to the Callbox can be made using this static address

Note: 10Gbps Ethernet port must be used when data rate between external IP application and UEs exceeds 1Gbps.

3.4 Login

To login as root, please use **root/toor** as login / password.

There is also a user account with **user/resu** as login/password.

Note: The Amarisoft software suit is installed and executed under root account.

3.5 Web GUI

The web GUI to display logs is available through web access at the following URL:
`http://<IP address>/`

3.5.1 Set a password

To add authentication to the web portal:

Edit `/etc/httpd/conf/httpd.conf` and look for `<Directory "/var/www/html">` section. Inside it, add `AuthConfig` to `AllowOverride` directive so that it becomes `AllowOverride None AuthConfig`.

Then restart HTTP daemon:

```
service httpd restart
```

Create `/var/www/html/lte/.htaccess` file with following content:

```
AuthType Basic
AuthName "Amarisoft Web GUI"
AuthUserFile /etc/httpd/.htpasswd
Require valid-user
```

To add a user and its password, type the following command:

```
htpasswd -c /etc/httpd/.htpasswd <username>
```

3.6 Initial testing

UE Simbox is designed to work in good radio conditions. As a result, we strongly recommend to use cables between RF connectors of your Simbox setup and base station for your simulation. All Simboxes are configured to provide an automatic LTE service. At each reboot of the PC, a single LTE UE is started automatically. This UE is configured in LTE category 4, band 7 in a 5 MHz cell in SISO.

Once you are logged in PC, you can access UE by using `screen` command:

```
screen -x lte
```

This will connect you to the UE simulator monitor.

The UE simulator software is located in `/root/ue`.

For more information on how to configure the UE, please read documentation located in `/root/ue/doc`.

4 Miscellaneous

4.1 Logs

Components put their current logs in `/tmp` directory.
Logs will be backed up in `/var/log/lte` directory.

The `/tmp/lte.log` file is log for service.

4.2 Graphical interface

You may use Gnome 3 GUI by typing following command when logged locally on PC:

```
startx
```

4.3 System Upgrade

When a new release is available, you'll need to update your system. The steps to follow are explained below.

- Download your release from Amarisoft Extranet at <https://extranet.amarisoft.com/>
The downloaded file would be a tarball file: `amarisoft.YYYY-MM-DD.tar.gz` where YYYY-MM-DD is the release date.
- Put this file on the PC at any place using the method you want (scp, http, USB key...) and extract it:

```
tar xzf amarisoft.YYYY-MM-DD.tar.gz
```

This would create a directory called YYYY-MM-DD.

- As **root**, Go to the directory YYYY-MM-DD and execute the provided script `install.sh` as follows:

```
./install.sh <path> --default
```

- By default if no `<path>` is specified, components are installed in `/root`, you can choose other directories by specifying a new destination in `<path>`. Please note that **www** component will always be located under `/var/www/html` in Fedora or `/var/www` in Ubuntu.
- The `--default` option forces answer to default for all questions asked during install phase. The default answers for **Callbox series** are depicted below:

```

* Installing Amarisoft LTE 2017-07-04 *
*****

Fedora 20 found
1) Configuration
  You can exit install script during this step, nothing will be changed
  until next step
  * Do you want to install LTE automatic service ? y
    - Do you want to enable LTE automatic service ? y
  * Do you want to install EPC ? y
    - Do you want to install IMS ? y
    - Do you want to use IPv6 ? n
  * Do you want to install eNB ? y
    - Select TRX radio frontend:
      1) sdr (default)
      > sdr
    - Do you want to use MIMO ? y
  * Do you want to install MBMS gateway ? y
  * Do you want to install Web interface ? y
2) Configure Automatic Service
3) Install Web interface
4) Install TRX sdr
5) Install eNB
  Use TRX sdr
  [TRX] Fedora 20 found
  [TRX] === Device /dev/sdr0 ===
  [TRX] Hardware ID=0x4b02
  [TRX] FPGA revision=0.9.51
  [TRX] Software version=2017-03-28
  [TRX] === Device /dev/sdr1 ===
  [TRX] Hardware ID=0x4b02
  [TRX] FPGA revision=0.9.51
  [TRX] Software version=2017-03-28
  [TRX] === Device /dev/sdr2 ===
  [TRX] Hardware ID=0x4b01
  [TRX] FPGA revision=0.9.51
  [TRX] Software version=2017-03-28
  [TRX] === Device /dev/sdr0 ===
  [TRX] The FPGA firmware is already up to date
  [TRX] === Device /dev/sdr1 ===
  [TRX] The FPGA firmware is already up to date
  [TRX] === Device /dev/sdr2 ===
  [TRX] The FPGA firmware is already up to date
6) Install EPC
7) Install IMS
8) Install MBMS gateway
9) Start service

#####
# Installation successful #
#####

```

The default answers for UE Simbox series are depicted below:

```

[root@localhost 2017-07-04]# ./install.sh --default
*****
* Installing Amarisoft LTE 2017-07-04 *
*****

Fedora 23 found
1) Configuration
  You can exit install script during this step, nothing will be changed
  until next step
  * Do you want to install LTE automatic service ? y
    - Do you want to enable LTE automatic service ? y
  * Do you want to install UE simulator ? y
    - Select TRX radio frontend:
      1) sdr (default)
      > sdr
  * Do you want to install Web interface ? y
2) Configure Automatic Service
3) Install Web interface
4) Install TRX sdr
5) Install UE simulator
  Use TRX sdr
  [TRX] Fedora 23 found
  [TRX] === Device /dev/sdr0 ===
  [TRX] Hardware ID=0x4b02
  [TRX] FPGA revision=0.9.51
  [TRX] Software version=2017-03-28
  [TRX] === Device /dev/sdr1 ===
  [TRX] Hardware ID=0x4b01
  [TRX] FPGA revision=0.9.51
  [TRX] Software version=2017-03-28
  [TRX] === Device /dev/sdr0 ===
  [TRX] The FPGA firmware is already up to date
  [TRX] === Device /dev/sdr1 ===
  [TRX] The FPGA firmware is already up to date
6) Start service

#####
# Installation successful #
#####

```

Take a look at messages at the end of install phase, you may be requested to power on/off your PC. This would be the case if there is, for example, an FPGA upgrade of your PCIe

SDR card.

If you would like to have a custom install, you can run the script without `--default` option and answer each question separately. For **Callbox series** product, this would typically be the case if you do not want to enable automatic LTE service or if you would like to install eNB and MME components on different PCs.

5 Advanced configuration

There are some parameters you can change in your setup if needed.

To do this, go to `/root/ots/config` and:

- Create your empty configuration file.
- Add `source ots.default.cfg` to your config file to load default parameters
- Add your custom parameters after `source` call.
- Change symlink `ots.cfg` to point your config file.

Of course, you need to restart LTE service to use new config.

Example:

```
cd /root/ots/config

touch myconfig.cfg
echo "source ots.default.cfg" >> myconfig.cfg
echo "LOG_SIZE=50M" >> myconfig.cfg

rm -f ots.cfg
ln -s myconfig.cfg ots.cfg
```

```
service lte restart
```

The configuration variables are:

ERROR_DELAY

Time in seconds before restarting any software component badly stopped.

LOG_FILE Log file of the lte service.

LOG_FILE_SIZE

Automatic service log file size for rotation (K, M, G units accepted).

LOG_PATH Path where to store rotated log.

LOG_SIZE Components log file size threshold for rotation (K, M, G units accepted).

LOG_PERSISTENT_SIZE

Maximum amount of logs stored in `LOG_PATH`. When directory reaches this threshold, oldest log file will be deleted.

LOG_PERSISTENT_COUNT

Maximum number of log files stored in `LOG_PATH`. When directory reaches this threshold, oldest log file will be deleted.

LOG_POLL_DELAY

Time in seconds between two checks for cleaning `LOG_PATH`.

LOG_GZIP Set it to 1 to compress log file when rotated.

LOG_BACKUP_ON_STOP

Set it to n to avoid log backup (to `LOG_PATH`) on component stop.

COMPONENTS

List of component IDs to start.

Each component can be configured with the following variables:

XXX_PATH Path of the component binary. If not found or not set, component won't be started.

`XXX_CONFIG_FILE`

Config file to use for this component. Relative to `XXX_PATH`.

`XXX_INIT` `lte_init.sh` command line parameter for component.

`XXX_AUTOSTART`

If set to 1 or not defined, component will be started automatically by service, else, you need to start it manually.

`XXX_TYPE` Component flavour. Can be `MME`, `ENB`, `IMS`, `MBMSGW`, `LICENSE...`

`XXX_WIN` Component window index inside screen session.

Where `XXX` is the ID of the component and must be unique.

Those variables are use by `ltestart.sh` script.

6 Reinstall your system

You can reinstall your system with following procedure.

This allow you to reset everything.

Note that all previously stored information on the system will be deleted.

6.1 Create bootable USB dongle

6.1.1 Download Linux ISO

Download the ISO file from https://download.fedoraproject.org/pub/fedora/linux/releases/28/Workstation/x86_64/iso/

6.1.2 Install tools

```
dnf install livecd-tools
```

6.1.3 Prepare USB device

Get a USB key bigger than downloaded ISO file (> 2GB).

Note that all data on it will be lost.

Then in a shell, with root permissions:

```
dmesg -w
```

Plug your USB dongle and you should see lines display on the terminal.

Identify your USB device node with such a line:

```
[23846.382531] sdb: sdb1
```

Our device is *sdb*, you can now create it:

```
livecd-iso-to-disk --format --reset-mbr Fedora-Workstation-Live-x86_64-26-1.1.iso /dev/sdb
```

6.2 Install OS

6.2.1 Boot

Reboot the system and when BIOS screen is displayed enter it by clicking on *F2* and select USB device to boot on.

When booting, select *Start Fedora-Workstation-Live*.

6.2.2 Install

When GUI is displayed, select *Install to hard drive*.

The follow installation procedure until you reach *Installation destination*. Click on it.

Inside menu, check *I would like to make additional space available*.

Then click on *Done*, *Delete All* and *Reclaim space*.

Continue until end of procedure.

6.2.3 Configure

When system is ready, install following packages:

```
dnf -y install make gcc lksctp-tools.x86_64 kernel-modules-extra.x86_64 kernel-devel.x86_64
```

If you are using Ettus radio frontend:

```
dnf -y install uhd
```

6.3 Install software

Log on your Extranet account at <https://extranet.amarisoft.com> and download latest release, then install it.

7 Troubleshoot

To report a problem, please open a ticket and make sure that you attach all logs and configuration files for our support team to investigate.

7.1 Contact

- Our Extranet site is located at `extranet.amarisoft.com`. This site would give you access to our documentation and new releases.
- For all technical issues, you can create a ticket describing your problem on our support site at `support.amarisoft.com`. Please note that you need to have an active account in our Extranet in order to be able to login to our support site. Your credentials are the same as the ones you use to access Extranet.
- our FTP server is located at `ftp.amarisoft.com`. This server should be used to exchange big logs. Your credentials are the same as the ones you use to access Extranet. Please note that you need to use an FTP client supporting SSL such as Filezilla.
- For any request concerning license delivery or addition of new accounts, please send an email to `delivery@amarisoft.com`.

8 Additional Information

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