OpenSand live

OpenSand live is a live image for CD or USB media and contains a minimalistic set of software to try OpenSand on your computer.

It includes :

- A live minimalistic Debian GNU/Linux distribution
- A complete OpenSand installation on the live cd to emulate the satellite
- QEmu with 2 Debian images to emulate a gateway and a satellite terminal
- Lightweight desktop environment and some scripts...

It's recommended to boot it on computer that have at least 1Gb of RAM, because of the two VMs

How to use it

Creating the media

First, you'll need to download the image somewhere.

Then :

- For cd, burn it with your favorite CD recorder
- For USB media

```
dd if=opensand_live.iso of=/dev/sdX
```

where sdX is your usb media device

Once booted

Basic usage

The virtual machines boots automatically, a little dialog message informs you of the progress. Once the virtual machines are started, the manager starts. All the three components (*sat*, *st1*, *gw*) should be present and correct (blue icons).

You can then start OpenSand emulation by clicking « Start OpenSand » button in OpenSand manager.

Once OpenSand is started, you can execute the two scripts present on the desktop that will test with

a ping on the emulated network (from *st1* to *gw* or from *gw* to *st1*)

You can access *st1* or *gw* via ssh, using `ssh st1` or `ssh gw`. No password should be asked, but if needed, all passwords are **opensand**

Description

Infrastructure

OpenSand needs at least 3 components : a satellite (*sat*), a gateway (*gw*) and a satellite terminal (*st1*).

The gateway and the satellite terminal are emulated via virtual machines using `qemu-system-i386`. The *sat* component runs directely on the live cd.

The emulation network is on IP network `192.168.18.0/24`. The network is created using a bridge on the host (*sat*), composed of the tap interfaces of the vms.

The IPs are the following for the emulation network :

Component	**IP**
Gateway (VM)	`192.168.18.2`
ST1 (VM)	`192.168.18.3`
Sat (Host)	`192.168.18.15`

Once started, OpenSand will interconnect the ST1 and gateway networks that are :

Component	**Network**	**IPs**
Gateway	`192.168.20.0/24`	`192.168.20.1` and `192.168.20.3`
ST1	`192.168.19.0/24`	`192.168.19.1` and `192.168.19.3`

Virtual machines

The two virtuals machines images are located in `/usr/share/opensand/vm/`. They are started by the `opensand-live` script that is ran when the live starts. They are powered by **qemu** PC emulator without KVM extension for more compatibility. The VMs are started with a memory snapshot that correspond to the booted state in order to fasten up the booting time.

The script starts the VMs in background, but you can access to their console via VNC :

- `vncviewer :1` for *gw*
- `vncviewer :2` for *st1*

How to generate it

Generate

If you want, you can also regenerate this image, and customize it by the way.

The image is generated via Debian live.

You can download *somewhere* :

- `opensand-live_core.tar.gz` that contains all the needed files except the VMs images
- `opensand-live_img.tar.gz` that containts the VMs images

Then generate it simply via :

```
# tar xzf opensand-live_core.tar.gz
# tar xzf opensand-live_img.tar.gz
# cd opensand_live
# lb config
# lb build
```

At then end of the process, the file **binary.hybrid.iso** will be ready to use

Customize

Keep in mind that the Debian live documentation will be very useful.

Here will be described the contents of the `opensand-live_core.tar.gz` :

- `auto/`
  - `config` : Will describe the base config of the image (architecture, version, boot command line, and others Debian options)
- `config/`
  - `hooks/` : In this folder are placed some executables scripts that will be launched chrooted at the end of the generation. In particular, the hooks will change sudo behaviour and set the parameters for OpenSand component (*sat*) running on the live platform
  - `includes.chroot/` : Contains specific files for our live media that will be copied as is on the target filesystem. In particular, it contains the scripts for opensand-live, the VMs images, and some home customizations (located in `etc/skel/` as the user will be created on the fly)
  - `package-lists/packages.list.chroot` : List of the Debian packages that will be installed on the target
  - `packages.chroot/` : Contains .deb packages that will be installed on the target. In particular, it contains all OpenSand debian packages and needed dependencies that are not available in standard Debian repositories