VLS user guide

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This document is the complete user guide of VLS.

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Chapter 1. Introduction

What is the VideoLAN project ?

Overview

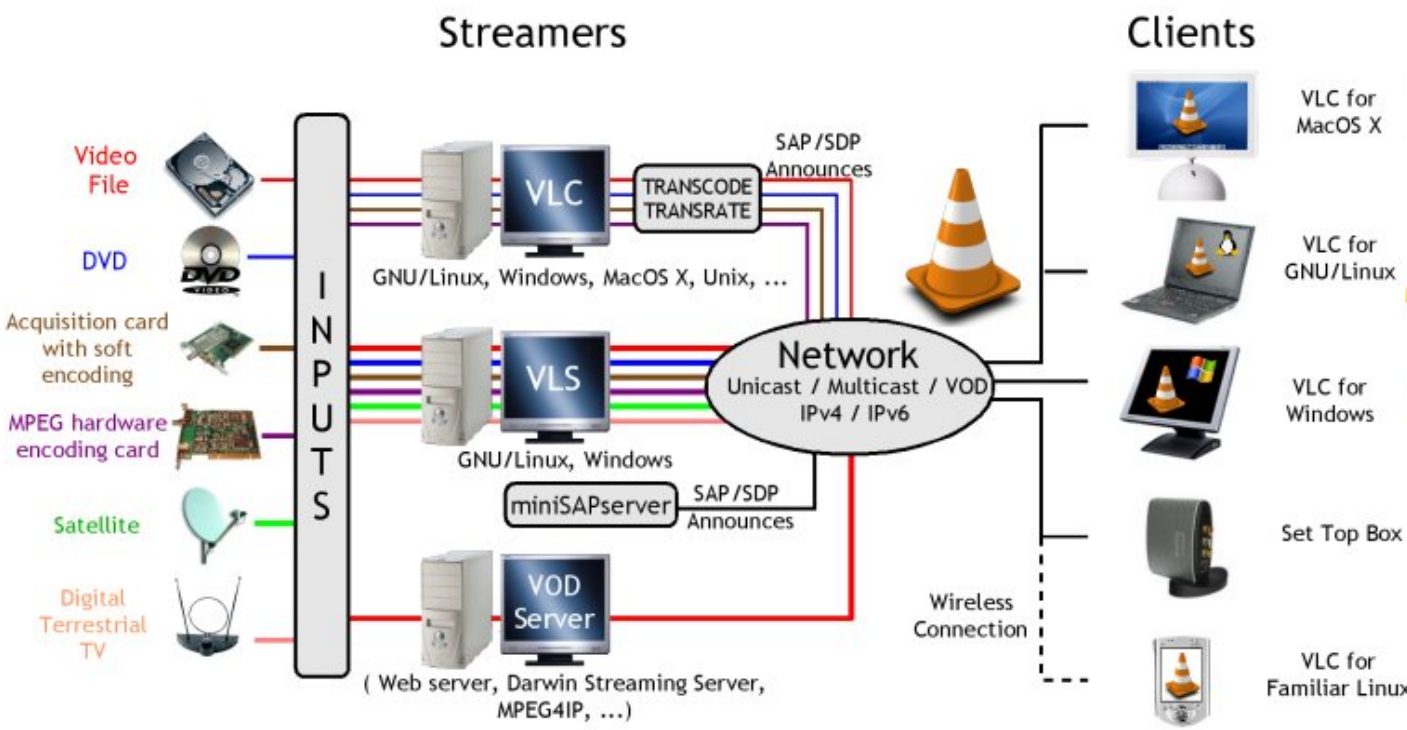
VideoLAN is a complete software solution for video streaming, developed by students of the Ecole Centrale Paris (http://www.ecp.fr) and developers from all over the world, under the GNU General Public License (http://www.gnu.org/copyleft/gpl.html) (GPL). VideoLAN is designed to stream MPEG videos on high bandwidth networks.

The VideoLAN solution includes:

- VLS (VideoLAN Server), which can stream MPEG-1, MPEG-2 and MPEG-4 files, DVDs, digital satellite channels, digital terrestial television channels and live videos on the network in unicast or multicast,
- VLC (initially VideoLAN Client), which can be used as a server to stream MPEG-1, MPEG-2 and MPEG-4 files, DVDs and live videos on the network in unicast or multicast ; or used as a client to receive, decode and display MPEG streams under multiple operating systems.

Here is an illustration of the complete VideoLAN solution:

Figure 1-1. Global VideoLAN solution



More details about the project can be found on the VideoLAN Web site (http://www.videolan.org/).

VideoLAN software

VLC

VLC works on many platforms: Linux, Windows, Mac OS X, BeOS, *BSD, Solaris, Familiar Linux, Yopy/Linupy and QNX. It can read:

- MPEG-1, MPEG-2 and MPEG-4 / DivX files from a hard disk, a CD-ROM drive, ...
- DVDs and VCDs,
- from a satellite card (DVB-S),
- MPEG-1, MPEG-2 and MPEG-4 streams from the network sent by VLS or VLC's stream output.

VLC can also be used as a server to stream:

- MPEG-1, MPEG-2 and MPEG-4 / DivX files,
- DVDs,
- from an MPEG encoding card,

to:

- one machine (i.e. to one IP address): this is called *unicast*,
- a dynamic group of machines that the clients can join or leave (i.e. to a multicast IP address): this is called *multicast*,

in IPv4 or IPv6 .

To get the complete list of VLC's possibilities on each plateform supported, see the VLC features page (http://www.videolan.org/vlc/features.html).

> **Note:** VLC doesn't work on Mac OS 9, and will probably never do.

VLS

VLS can stream:

- an MPEG-1, MPEG-2 or MPEG-4 files stored on a hard drive or on a CD,
- a DVD located in a local DVD drive or copied on a hard disk,
- a satellite card (DVB-S) or a digital terrestial television card (DVB-T) ,
- an MPEG encoding card ;

to :

- one machine (i.e. to one IP address): this is called *unicast*,
- a dynamic group of machines that the clients can join or leave (i.e. to a multicast IP address): this is called *multicast*,

in IPv4 or IPv6 .

A Pentium 100 MHz with 32 MB of memory should be enough to send one stream on the network. When streaming a lot of videos stored on a hard drive, the actual limitation is not the processor but the hard drive and the network connection.

VLS works under Linux and Windows. To get the complete list of VLS's possibilities on each plateform supported, see the streaming features page (http://www.videolan.org/streaming/features.html).

Mini-SAP-server

You can add a channel information service based on the SAP/SDP standard to the VideoLAN solution. The mini-SAP-server sends announces about the multicast programs on the network in IPv4 or IPv6, and VLCs receive these annouces and automatically add the programs announced to their playlist.

The mini-SAP-server works under Linux and Mac OS X.

What is a codec ?

To fully understand the VideoLAN solution, you must understand the difference between a *codec* and a *container format*

- A *codec* is a compression algorithm, used to reduce the size of a stream. There are audio codecs and video codecs. MPEG-1, MPEG-2, MPEG-4, Vorbis, DivX, ... are codecs
- A *container format* contains one or several streams already encoded by codecs. Very often, there is an audio stream and a video one. AVI, Ogg, MOV, ASF, ... are container formats. The streams contained can be encoded using different codecs. In a perfect world, you could put any codec in any container format. Unfortunately, there are some incompatibilities. You can find a matrix of possible codecs and container formats on the features page (http://www.videolan.org/streaming/features.html)

To decode a stream, VLC first *demuxes* it. This means that it reads the container format and separates audio, video, and subtitles, if any. Then, each of these are passed *decoders* that do the mathematical processing to decompress the streams .

There is a particular thing about MPEG:

- MPEG is a *codec*. There are several versions of it, called MPEG-1, MPEG-2, MPEG-4, ...
- MPEG is also a container format, sometimes refered to as *MPEG System*. There are several types of MPEG: ES, PS, and TS

  When you play an MPEG video from a DVD, for instance, the MPEG stream is actually composed of several streams (called Elementary Streams, ES): there is one stream for video, one for audio, another for subtitles, and so on. These different streams are mixed together into a single Program Stream (PS). So, the .VOB files you can find in a DVD are actually MPEG-PS files. But this PS format is not adapted for streaming video through a network or by satellite, for instance. So, another format called Transport Stream (TS) was designed for streaming MPEG videos through such channels.

How can I use VideoLAN ?

Documentation

The user documentation of VideoLAN is made up of 4 documents:

- the *VideoLAN HOWTO*. This document is the complete guide of the VideoLAN streaming solution. It will give you practical examples to set up your streaming solution.
- the *VLC user guide*. This document is the complete guide for VLC.
- the *VLS user guide*. This document is the complete guide for VLS.
- The *VideoLAN FAQ*. This document contains Frequently Asked Questions about VideoLAN.

The latest version of these documents can be found on the documentation page (http://www.videolan.org/doc/) .

User support

If you have problems using VideoLAN, and if you don't find the answer to your problems in the documentation, please look at the online archive of the mailing-lists (http://www.via.ecp.fr/via/ml/videolan-en.html). There are two English-speaking mailing-lists for the users:

- *vlc@videolan.org* for the questions on VLC ,
- *streaming@videolan.org* for the questions on VLS, mini-SAP-server and the network .

If you want to subscribe or unsubscribe to the mailing-lists, please go to the mailing-list page (http://www.videolan.org/support/lists.html).

You can also talk with VideoLAN users and developers on IRC: server *irc.freenode.net*, channel *#videolan* .

If you find a bug, please follow the instructions on the bug reporting page (http://www.videolan.org/support/bug-reporting.html) .

Command line usage

- VLC has many different graphical interfaces, that are organized quite differently in order to be in harmony with the guidelines of each operating system supported. Documenting the use of each graphical interface is too long, and some features are only available via the command line interface. Therefore we decided to document only the command line interface, but in many cases it shoud be easy to guess how to use the graphical interface for the same use !
- VLS has a command line and a telnet interface, but no graphical interface !

All the commands that show up in this document should be typed inside a terminal. .

Open a terminal

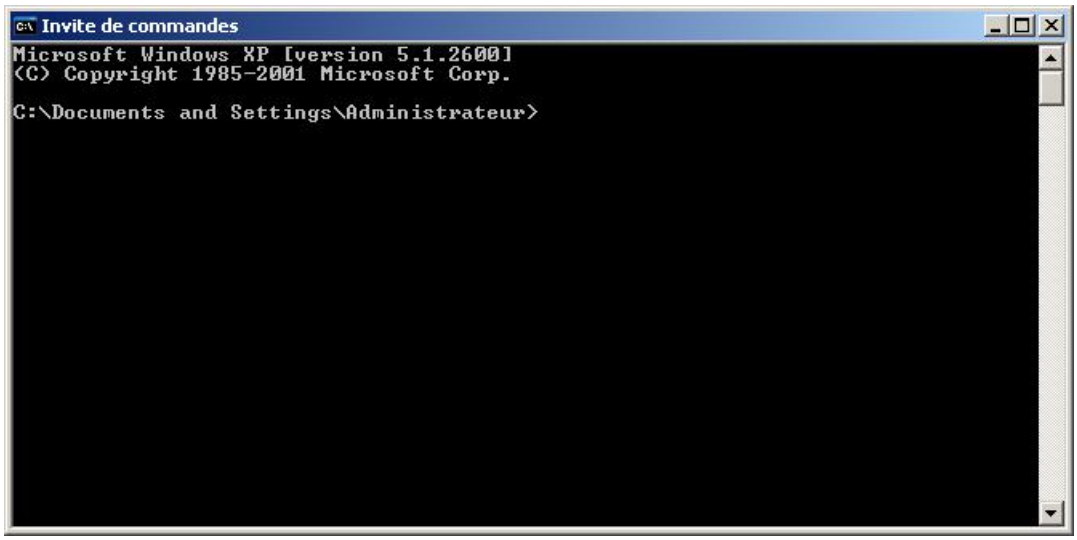
Windows

Click on *Start*, *Run* and type:

- **cmd Enter** (Windows 2000 / XP),
- **command Enter** (Windows 95 / 98 / ME).

The terminal appears

Figure 1-2. Windows terminal



Note: Under Windows, you need to be in the directory where the program is installed to run it.

Linux / Unix

Open a terminal :

Figure 1-3. Linux X terminal

In the documentation, we adopt the following conventions for the Unix commands:

- commands that should be typed as *root* have a **#** prompt:

  ```
  #  command_to_be_typed_as_root
  ```

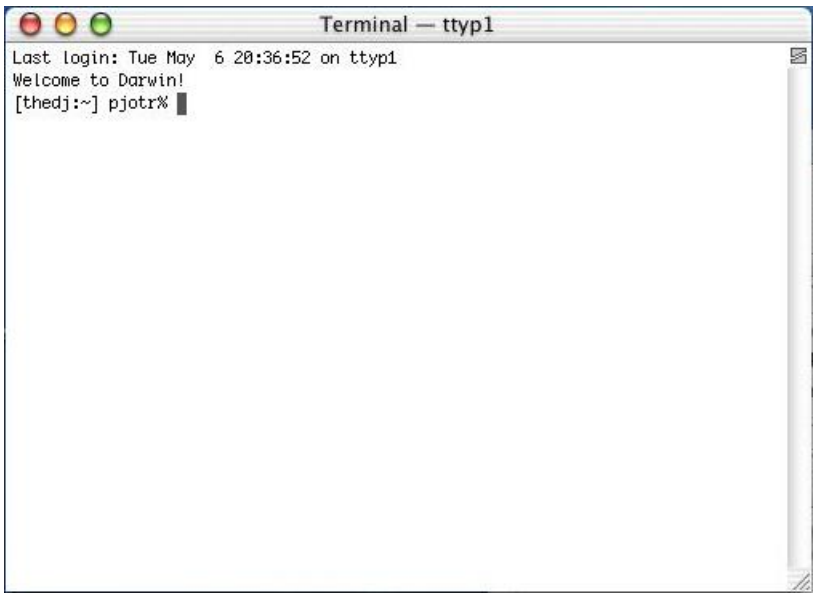
- commands that should be typed as a regular user have a **%** prompt:

  ```
  % command_to_be_typed_as_regular_user
  ```

Mac OS X

Go to *Applications*, open the folder *Utilities* and double-click on *Terminal* :

Figure 1-4. Mac OS X terminal

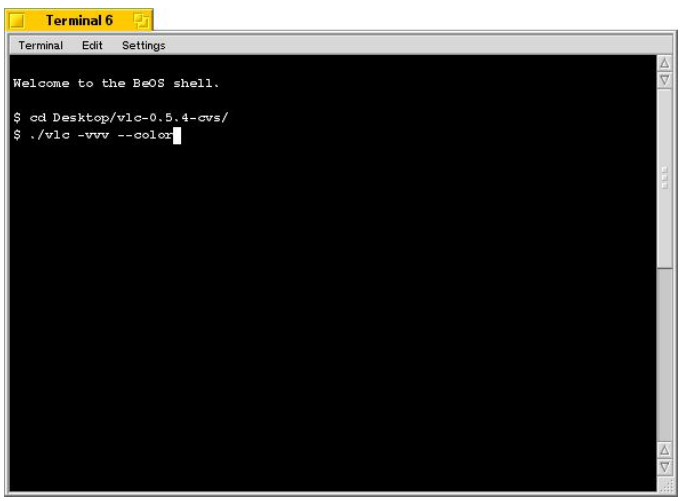


Note: Under Mac OS X, you need to be in the directory where the program is installed to run it, and start the command with **./**.

BeOS

In the deskbar, go to *Application* and then *Terminal*:

Figure 1-5. BeOS terminal



Note: Under BeOS, you need to be in the directory where the program is installed to run it, and start the command with **./** .

Chapter 2. Installing VLS

Installing VLS

Windows

Download the ZIP file from the VLS Windows download page (http://www.videolan.org/streaming/download-vls-windows.html), unzip-it and run `setup.exe`.

GNULinux & Mac OS X

Install the libraries

Many libraries are needed for particular uses :

- *libdvbpsi* (always needed)
- *libdvdcss* if you want to be able to access encrypted DVDs ,
- *libdvdread* if you want to be able to stream DVDs ,
- *libdvb* if you want to be able to stream from a DVB card (a satellite card or a digital terrestial TV card).

Download the libraries from the VLS sources download page (http://www.videolan.org/streaming/download-vls-sources.html).

For each library, uncompress, configure (unless for *libdvb* which doesn't have a *./configure*), compile and install:

```
% tar xvzf library.tar.gz
% cd library
% ./configure
% make
# make install
```

On GNU/Linux, check that the configuration file `/etc/ld.so.conf` contains the following line:

```
/usr/local/lib
```

If the line is not present, add-it and then run:

```
# ldconfig
```

On Mac OS X, run :

```
# ranlib /usr/local/lib/*.a
```

Install VLS

Download the sources of the latest release : get the file `vls-version.tar.gz` from the VLS sources download page (http://www.videolan.org/streaming/download-vls-sources.html). Uncompress-it and generate *./configure*:

```
% tar xvzf vls-version.tar.gz
% cd vls-version
```

To get the list of configuration options, do :

```
% ./configure --help
```

Then configure VLS:

- if you want a basic VLS without DVD support, do möchten, machen Sie :

  ```
  % ./configure --disable-dvd
  ```

- if you want a VLS with DVD support, do:

  ```
  % ./configure
  ```

- if you want a VLS with DVB support, do:

  ```
  % ./configure --enable-dvb --with-dvb=PATH_TO_DVB_DRIVERS --with-libdvb=PATH_TO_LIBDVB
  ```

Then, compile and install:

```
% make
# make install
```

You can also do a **make uninstall**, **make clean** or **make distclean** as needed.

Uninstalling VLS

Windows

Go to the *Control Panel*, click on *Add and remove programs*, select *VLS* and click on *Modify/Remove* and follow the steps to uninstall the program.

If you compiled VLS from sources

Go to the directory containing VLS sources and run:

```
# make uninstall
```

Then you can remove the VLS sources.

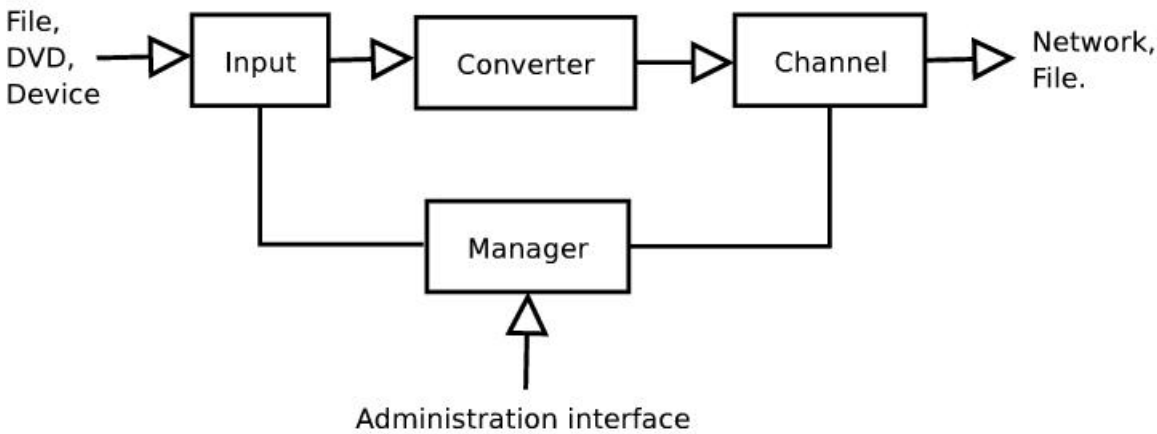
Chapter 3. Overview and basic concepts

VLS structure

From a user's point of view, VLS can be divided into four kinds of components:

- a *manager* ,
- *inputs* ,
- *converters* ,
- and *channels*.

Figure 3-1. VLS structure



Input

The role of an *input* is to read MPEG streams from a given source (file, DVD, DVB card, device, ...), and feed the right *converters* with these streams. An input may be able to read several streams, which are called *programs*. There are several kinds of inputs:

- the *local* input, which can read videos from files or DVDs ,
- the *video* input, which can read videos from MPEG encoding cards devices ,
- the *dvb* input, which can read videos from DVB cards ,
- the *v4l* input, which can read from acquisition cards supported by the Video4Linux drivers.

You can use several inputs and play several programs at the same time.

Converter

The role of a *converter* is to receive a stream from an input, and convert it into the MPEG-TS format. VLS is able to convert PS streams (from DVDs, for instance) into TS streams (ps2ts converter). Of course, it can also read TS streams, and fix them by handling stream discontinuities (ts2ts converter).

Channel

A *channel* receives a stream from a converter, and send it to a given destination (network, file, ...). If you want, you can call a "channel" an "output": it is the same thing !). Currently, two kinds of channels are supported: *network* and *file*. Note that, at the moment, VLS can support only one output per stream, so you cannot play a stream on the network and write it into a file at the same time. The network output is highly configurable: you can choose which network interface you want to use, and specify source and destination IP addresses .

Manager

The *manager* controls the way streams are sent. Through an *administration interface*, you can tell the manager to start, stop, suspend, resume, forward or rewind the different programs. You can also get a list of all programs available in the Program Table. The manager gets this table from the VLS configuration file (`vls.cfg`), so it cannot be changed once VLS has been started. At the moment, you cannot ask the manager whether a given stream is being broadcasted, but you will get an error message if you try to stop a stream that was not broadcasted .

Administration interface

There are currently two ways to launch the streaming:

- you can use the *command line* to give arguments at startup;
- or you can use the *telnet interface* to start/stop/pause the streaming whenever you want.

When using the telnet interface, you must authenticate before typing any command, because any user may not be allowed to execute any command (this can be configured in the `vls.cfg` configuration file).

Chapter 4. Configuration

VLS reads its configuration from the `vls.cfg` configuration file, which is supposed to be located in the current directory or in `SYSCONF_DIR/videolan/vls` (where *SYSCONF_DIR* is `/usr/local/etc` if you built and installed VLS by hand, or is `/etc` if you installed the debian binary package).

To write a `vls.cfg` file, use the one supplied with VLS as a start-point.

General structure

VLS configuration file `vls.cfg` is divided into sections, and each section may contain several variables:

```
BEGIN "FirstSection"
  Variable1 = "value1"
  Variable2 = "value2"
  [...]
END

BEGIN "SecondSection"
  Variable1 = "value1"
  Variable3 = "value3"
  [...]
END



[...]
```

All section names, variable names and values are not case-sensitive. There can be empty sections and subsections. Comments must follow a # character. Some variables have a default value; it means that you can ommit to declare these variables, and then they will be given their default value.

Writing a `vls.cfg`

Here is an explanation of all the sections you can find in a `vls.cfg`:

Section "VLS"

This section contains application wide settings.

`LogFile = "name"`

Name of VLS log file. If left empty "", then no logging to files is done. Default is "vls.log".

`SystemLog = "[disable|enable]"`

Logging to the SystemLog. Today, only the SystemLog using syslogd is implemented: compile with **./configure --enable-syslog**.

Caution

If VLS is started as **vlsd**, then the following configuration is mandatory:

```
BEGIN "Vls"
  LogFile   = ""
  SystemLog = "enabled"
  ScreenLog = "disabled"
END
```

```
ScreenLog = "[disable|enable]"
```

Logging to the console.

Example:

```
BEGIN "Vls"
  LogFile   = "vls.log"
  SystemLog = "disable"
  ScreenLog = "enable"
END
```

Section "Groups"

In this section, you can define some groups of users, and which commands these users are allowed to execute. For each group you want to define, you must add a line in the following format:

```
groupname = "command1|command2|..."
```

This adds a group "groupname", the users of which are allowed to execute command1, command2, and so on. At the moment, the available commands are: help, browse, start, suspend, resume, forward, rewind, stop, shutdown, logout.

Example:

```
BEGIN "Groups"
  monitor = "help|browse|logout"
  master  = "help|browse|start|resume|suspend|forward|rewind|stop|shutdown|logout"
END
```

Section "Users"

This section contains a list of users allowed to control VLS through an administration interface. For each user, add a line in the following format:

```
username = "password:groupname"
```

This adds a user "username", who belongs to the group "groupname" (defined in the "Groups" section) and can log in with the password "password".

- Under Unix/Linux, the password must be encrypted, with a tool such as **mkpasswd**, or with the UNIX function "crypt".
- Under Windows, the password must be in clear text.

Example for Unix/Linux:

```
BEGIN "Users"
```

```
  monitor = "3BcKWoiQn0vi6:monitor"       # password is 'monitor'
  admin   = "42BKiCguFAL/c:master"        # password is 'Vir4Gv5S'
END
```

Section "Telnet"

In this section, you can configure the telnet administration interface.

`LocalPort = "port"`

Defines which port will be used for the telnet server. Default port is "9999".

`Domain = "domain"`

Either "inet4" or "inet6" (default is "inet4"). If you want to use IPv4 addresses, put "inet4", and if you want to use IPv6, put "inet6".

`LocalAddress = "IP address"`

Defines on which IP address the telnet server will listen for requests. Default address is "0.0.0.0" (or "0::0" with IPv6).

Example:

```
BEGIN "Telnet"
  LocalPort = "9999"
END
```

Section "NativeAdmin"

Same syntax as "Telnet". Not used yet.

Section "Inputs"

In this section, you can define which inputs you want to use. For each input you need, add a line in the following format:

`InputName = "Type"`

This adds a input named "InputName", the type of which is "Type". As explained before, there are several types of input:

- "local" to play a stream from a file or a DVD ,
- "video" to play a stream from an MPEG encoding card ,
- "dvb" to play a stream from a DVB card ,
- "v4l" to play a stream from a Video4Linux device.

Each input must be configured in its own section (see next paragraph).

Example:

```
BEGIN "Inputs"
  local1 = "local"
  pvr    = "video"
  dvb1   = "dvb"
  tuner  = "v4l"
```

```
END
```

Inputs configuration

For each input declared in the "Inputs" section, excepted "local" inputs, you must add a section with the same name as the corresponding input. For instance, if you declared an input "pvr", there should be one section named "pvr" too. The syntax of such sections depends on the type of the corresponding input.

To configure a local input, you don’t have to do anything. Except when another trickplay strategy must be used:

```
BEGIN "Local1"
  ProgramCount = "1"
  TrickPlay    = "normal"
END
```

"Local1" is the name of the local input you want to configure. "ProgramCount" is the number of programs assigned to this input. "TrickPlay" is the trickplay strategy that is used by this input (default is "normal").

To configure a video input, add a section in the following format:

```
BEGIN "VideoInputName"
  Device = "device"
  Type   = "type"
END
```

"VideoInputName" is the name of the video input you want to configure. "Device" is the path of the MPEG encoding card you want to read from (default is "/dev/video"). "Type" is either "Mpeg2-PS" or "Mpeg2-TS", depending on your device configuration (default is "Mpeg2-PS").

Example for a Hauppauge WinTV-PVR-250 card:

```
BEGIN "pvr"
  Device = "/dev/video0"
  Type   = "Mpeg2-PS"
END
```

To configure a dvb input, add a section in the following format:

```
BEGIN "DvbInputName"
  DeviceNumber = "devicenumber"
  SendMethod   = "0"
END
```

"DvbInputName" is the name of the dvb input you want to configure. Set "SendMethod" to "0" if you to stream the complete DVB stream and set it to "1" if you only want to stream the MPEG audio and video streams (default is "0"). "DeviceNumber" is the number of the DVB device you want to read from (read from `/dev/ost/dvr<devicenumber>`, default is ""). The dvb configuration file is defined by the driver. You can find it in `$HOME/.dvbrc` for /dev/dvb/adapter0 or in `$HOME/.dvbrc.X` for `/dev/dvb/adapterX` .

Example:

```
BEGIN "dvb1"
  DeviceNumber = "0"
  TrickPlay = "normal"
END
```

Section "Channels"

In this section, you can define the channels (outputs) you want to use. For each channel, write a line in the following format:

```
ChannelName = "Type"
```

This adds a channel named "ChannelName", the type of which is "Type". "Type" must be either "network" or "file". Like inputs, channels must be configured in their own section.

Example:

```
BEGIN "Channels"
  localhost  = "network"
  client1    = "network"
  client2    = "network"
  multicast1 = "network"
  multicast2 = "network"
  localfile  = "file"
END
```

Channels configuration

For each channel declared in the "Channels" section, you must add a section with the same name as the corresponding channel. The syntax of such a section depends on the type of the corresponding channel.

To configure a network channel, add a section in the following format:

```
BEGIN "NetChannelName"
  Domain    = "Domain"
  Type      = "Type"
  SrcHost   = "SourceHost"
  SrcPort   = "SourcePort"
  DstHost   = "DestHost"
  DstPort   = "DestPort"
  TTL       = "ttl"
  Interface = "Interface"
END
```

- "NetChannelName" is the name of the network channel you want to configure.
- "Domain" is either "inet4" if you use IPv4 addresses, or "inet6" if you use IPv6 (default is "inet4").
- "Type" is either "unicast", "broadcast" or "multicast" (default is "unicast"), depending on what you want to do (and on your "DstHost" address).
- "SourceHost" is the IP address (or DNS name) from which VLS will send the stream.
- "SourcePort" is the UDP port from which the stream will be sent.
- "DestHost" is the IP address (or DNS name) to which the stream will be sent.
- "DestPort" is the UDP port to which the stream will be sent (default is "1234").
- "TTL" is an option useful only if "Type" is "multicast" (default value is "0"). You can use it to increase the TTL of your multicast packets if they have to cross several routers.
- "Interface" is an option only supported under GNU/Linux, to force the stream to be sent through a given network interface ("eth1" for instance) To use this option, you must have super-user permissions.

Note: "SrcHost" and "SrcPort" are optional (if you don't set them, VLS will not 'bind' the socket).

To configure a file channel, add a section in the following format:

```
BEGIN "FileChannelName"
  FileName = "file"
  Append   = "append"
END
```

"FileChannelName" is the name of the file channel you want to configure. "file" is the name of the file where the stream will be stored (default is "fileout.ts"). "append" is either "yes" or "no", and indicates whether VLS will append the stream at the end of the file, or rewrite it.

Example:

```
BEGIN "localhost"         # The client is on the same host as the server
  DstHost = "localhost"
  DstPort = "1234"
END

BEGIN "client1"           # unicast towards client1
  DstHost = "192.168.1.2"
  DstPort = "1234"
END

BEGIN "client2"           # unicast towards client2 in IPv6
  Domain  = "inet6"
  DstHost = "3ffe:ffff::2:12:42"
  DstPort = "1234"
END

BEGIN "multicast1"         # multicast streaming
  Type    = "multicast"
  DstHost = "239.2.12.42"
  DstPort = "1234"
  TTL     = "2"
END

BEGIN "multicast2"         # multicast streaming in IPv6
  Domain  = "inet6"
  Type    = "multicast"
  DstHost = "ff08::1"
  DstPort = "1234"
  TTL     = "12"
END

BEGIN "localfile"         # file output
  FileName = "stream.ts"
  Append   = "no"
END
```

Caution

If you use Windows, you should specify the "SrcHost" and "SrcPort" fields. For example:

```
BEGIN "client1"         # The client is on the same host as the server
  SrcHost = "192.168.1.1"  # IP of VLS
  SrcPort = "1242"         # Source port : the value is not important
  DstHost = "192.168.1.2"  # IP of the client
  DstPort = "1234"
END
```

Programs Configuration

As explained before, you must define the programs. Each one is a MPEG stream (a file, for example). To do this, you must add an "Input" section in your `vls.cfg` file. Each "Input" section must have the following syntax:

```
BEGIN "Input"
  FilesPath    = "path"
  ProgramCount = "count"
END
```

"path" is the path where your MPEG files are located (by default it is the current directory). "count" is the number of programs defined ("0" by default).

For each program you want to define, you must add a section with the following format:

```
BEGIN "number"
  Name     = "name"
  Type     = "type"
  FileName = "file"
  Device   = "device"
END
```

- "number" is the program number: the first program has number 1, the second number 2, and so on.
- "name" is the program name, by which you will tell VLS to start this program (see next chapter "Running VLS").
- "type" can be "Mpeg1-PS", "Mpeg2-PS", "Mpeg2-TS", or "DVD". If your stream is stored in a MPEG file (*.mpeg, *.mpg, *.vob, and so on...), it is probably in Mpeg1-PS or Mpeg2-PS format.
- if "type" is set to "Mpeg1-PS", "Mpeg2-PS", or "Mpeg2-TS", VLS will assume your stream is stored in the file "file", in the directory "path" ("path" being the variable defined in the "Input" section).
- if "type" is "DVD", the variable "Device" will be used instead of "FileName" (the variable "FilesPath" is not prepended to the device name !). The variable "Device" is the device of your DVD drive ("/dev/hdc" or "/dev/cdrom" for instance). You can also play a DVD copied on a hard disk: then "Device" is the directory where the .vob files are stored ("/mnt/data/VIDEO_TS" for instance).

  Note: VLS can stream MPEG files that meet two critera

  - the file must be MPEG *PS* (Program Stream) or MPEG *TS* (Transport Stream), that contain video and audio multiplexed. VLS cannot stream MPEG *ES* (Elementary Stream), i.e. a file with only audio or video.

    In order to know if an MPEG file is MPEG *PS*, MPEG *TS* or MPEG *ES*, read the file with VLC and look at the messages (in the messageswindow or use the command line **vlc -vvv**).

    - If you see a line:

```
[00000107] main module debug: using demux module "ts_dvbpsi"
```

it means the file is MPEG TS.

- If you see a line:

  ```
  [00000109] main module debug: using demux module "ps"
  ```

  it means the file is MPEG PS.

- If you see a line:

  ```
  [00000109] main module debug: using demux module "es"
  ```

  it means the file is MPEG ES, VLS can't stream it.

- the sequence header of the video must repeat itself regularly, which is often the case with MPEG-2, but very rare with MPEG-1. There is no easy way to know if the sequence header is repeated regularly. Files with a *.vob* extension are normally MPEG-2 files and files with *.mpg* or *.mpeg* extension are usually MPEG-1 files.

You can download this streamable MPEG-2 PS file for your tests : presentation_short.vob (ftp://ftp.videolan.org/pub/videolan/streams/presentation/presentation_short.vob).

Note: In order to play DVDs, you need to compile VLS with DVD support, which uses libdvdread and libdvdcss. You will need read *and* write access rights to the DVD device.

Full example:

```
BEGIN "Input"
  FilesPath = "/home/videolan/streams"
  ProgramCount = "4"
END

BEGIN "1"     # MPEG2 stream stored in /home/videolan/streams/Dolby.vob
  Name     = "dolby"
  FileName = "Dolby.vob"
  Type     = "Mpeg2-PS"
END

BEGIN "2"     # another file
  Name     = "canyon"
  FileName = "Dolby_Canyon.vob"
  Type     = "Mpeg2-PS"
END

BEGIN "3"     # DVD
  Name     = "dvd"
  Device   = "/dev/cdrom"
  Type     = "Dvd"
END

BEGIN "4"     # DVD stored on a hard disk
  Name     = "matrix"
  Device   = "/mnt/data/matrix/VIDEO_TS"
  Type     = "Dvd"
END
```

Chapter 5. Running VLS

Launching VLS

If you want to use the telnet interface, running VLS is very easy: just type **vls** in a shell console, and that's all. Running **vlsd** will start VLS as a daemon and will detach itself from the launching shell. Remember that VLS will try to load its configuration file (`vls.cfg`) from the current directory, and if there is no `vls.cfg` there, it will try to load it from `SYSCONF_DIR/etc/videolan` (see section *Configuration*).

> **Caution**
>
> If your log file is `vls.log` as in the example, VLS will need write access in the current directory, or you will see something like:
>
> ```
> *** Exception *** in copy constructor (0xbffffc98, copy of 0x80e30a8)
> Unable to open the log file "vls.log": Error: Could not open file 'vls.log':
> Permission denied
> ```
>
> Remember also that you must be root when using the "Interface" option in `vls.cfg`.

If everything is right, you will see something like:

```
VideoLAN Server v 0.5.3 (Jun  6 2003) - (c)1999-2003 VideoLAN
2002-03-09 17:24:51 [INFO/Vls]  Module "channel:file" registered
2002-03-09 17:24:51 [INFO/Vls]  Module "channel:network" registered
2002-03-09 17:24:51 [INFO/Vls]  Module "mpegreader:file" registered
2002-03-09 17:24:51 [INFO/Vls]  Module "mpegconverter:ts2ts" registered
[...]
```

What you can see on the screen (stderr) is exactly what goes in the log file `vls.log`.

When VLS has been successfully started, it doesn't take any command from its standard input, so you can put it into background (you can use the *screen* utility to do that).

On the other hand, if you want to use the command line interface, please see the VideoLAN HOWTO (http://www.videolan.org/doc/).

Using the telnet interface

After VLS has been launched, it opens a telnet server (on the port 9999 by default). You can connect to this server with the following command:

```
% telnet localhost 9999
```

You should see something like:

```
Trying 127.0.0.1...
Connected to vls.
Escape character is '^]'.
Videolan Server Administration System
Login:
```

Then you must authenticate with a login/password pair defined in `vls.cfg`. When you have been successfully authenticated, you should see a prompt like:

```
admin@vls>
>
```

Then you can type some commands, which are explained in the next paragraph. To log out, type **logout** after the telnet prompt.

Interface commands

help

Usage: help [command].

Called with no argument, "help" gives the list of all the commands (available or not). Called with one argument it gives details about how to use the specified command.

browse

Usage: browse [input].

Called without argument, "browse" gives all programs of inputs. Called with one argument it only gives the programs of the specified input. Each program is given with its status.

start

Usage: start <program> <channel> <input> [--loop] [--rtp]

"start" launches the specified program of the specified input and broadcasts it through the specified channel. The option "--loop" makes the program being repeated indefinitely. The option "--rtp" makes the TS packet to be send through the RTP protocol, as defined in RFC 1889 and RFC 2250.

stop

Usage: stop <channel>

"stop" ends the broadcast of the specified channel.

forward

Usage: forward <channel> <speed>

"forward" forwards the channel with the given speed. This does not work when reading directly from a device such as an MPEG encoding card, a DVB card or an acquisition card.

rewind

Usage: rewind <channel> <speed>

"rewind" rewinds the channel with the given speed. This does not work when reading directly from a device such as an MPEG encoding card, a DVB card or an acquisition card.

suspend

Usage: suspend <channel>

"suspend" suspends the streaming of the specified channel.

resume

Usage: resume <channel>

"resume" resumes the streaming of the specified channel.

logout

Usage: logout

"logout" closes the current administration session and the remote connection.

shutdown

Usage: shutdown

"shutdown" stops all the programs and shutdowns VLS.

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