



Voice Logger Operations Manual

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4. Jan. 2008	0.1	Initial revision
22. Feb. 2008	0.2	Added sections on operations, maintenance, call records and voice activity detection
25. Jun. 2008	0.3	Added sections on global options and extension names. Some expansion and rewording of other parts. Now covers all types of logger, not just CAS.

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1 Introduction

This document is intended to be used as an aid in initial configuration of a Voice Logger system, and as a reference in the ongoing use of the system. It does not provide any information about installation of the software – this information can be found in the INSTALL file included with the logger source.

This document's target audience is the administrator of the Voicetronix Voice Logger software (vtlogger). Except where otherwise stated, this document specifically refers to the following software versions:

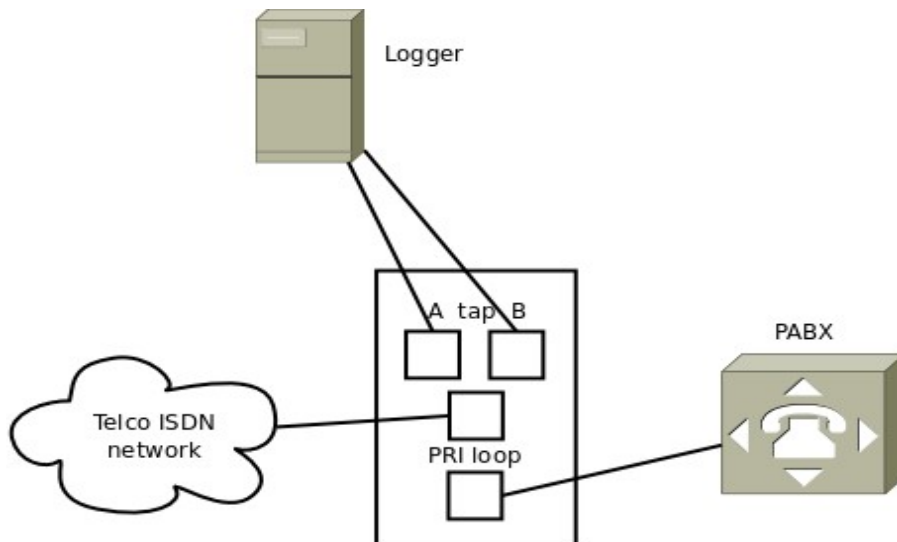
- vtlogger version 1.4.6
- logger-web version 3.0.11

2 Getting Started

2.1 Connecting the Cables

For each logger card in the machine, you should have an ISDN logger “tap box” with four sockets – two labeled as the “A” and “B” tap sockets, and the other two labeled as “PRI Loop”. The line that you wish to record from will need to go via the PRI Loop sockets (i.e. pull one end out – while there are no calls in progress – and put it into one PRI Loop socket, then connect another cable between the other PRI Loop socket and the socket that the other cable was removed from). With the tap box connected like this, your ISDN service should work exactly as it did before (and it's worthwhile testing at this point to make sure).

The two supplied flat silver cables should now be used to connect the remaining sockets in the tap box to the Voicetronix card in the server. This is the audio tap.



3 Using the Web Interface

The web interface can be accessed by pointing a web browser at `http://<ip-address>/` where `<ip-address>` is the configured IP address of the server.

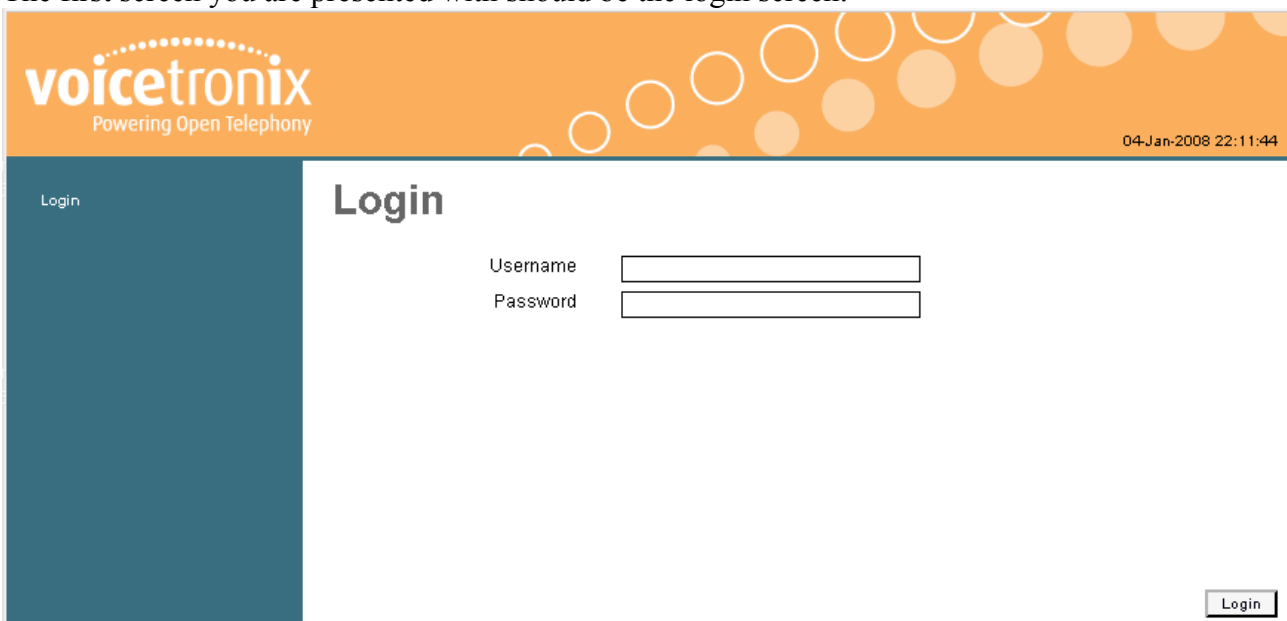
There are two different levels of access, each of which presents a different set of functionality through the same interface. These levels are administrator access and user access.

The administrator access allows you to perform tasks such as maintaining user (and administrator) accounts, configuring which channels each user is allowed to access (through the use of access groups), setting meaningful names for each channel, and configuring scheduled backups.

User access provides access to a limited (by the groups that user is a member of) set of call recordings. User access also allows searching for specific recordings by time/date and channel number.

3.1 Login Screen

The first screen you are presented with should be the login screen:



The screenshot shows the Voicetronix login interface. At the top, there is an orange banner with the Voicetronix logo and the tagline "Powering Open Telephony". On the right side of the banner, the date and time "04-Jan-2008 22:11:44" are displayed. Below the banner, there is a dark teal sidebar on the left with the word "Login" in white. The main content area is white and features the word "Login" in large, bold, black text. Below this, there are two input fields: "Username" and "Password", each with a corresponding label to its left. A "Login" button is located at the bottom right of the page.

The default usernames and passwords are:

For the administrator:

Username: admin

Password: admin

For the user:

Username: user

Pasword: user

For security, it is recommended that as a minimum these passwords be changed before the system is used for call recording.

After logging in, a user is always taken to the last page they looked at in their previous login session. If they have never logged in before, then they see the message “you are logged in”.

3.2 User Management

Logged in as an administrator, select the “Manage users” menu option. This will present a list of all users (initially just a sample administrator and a sample user), like this:

Username	Real Name	Action
admin	Sample Administrator	edit
user	Sample User	edit

From here, users can be added (click the “Add user” button at the bottom right), edited (click the edit link for an individual user) or deleted (click the edit link for an individual user, then the “Delete” button at the bottom right of the edit screen).

For explanatory text on any edit screen, hover your mouse over the question mark for pop up help.

3.3 Group Management

Groups are used to provide different levels of access to different users. A group contains a list of users and a list of channels which those users are allowed to access. A user can be a member of more than one group, in which case they can access any channel that at least one of their groups is permitted to access.

To manage groups, select the “Manage groups” menu option while logged in as an administrator. This will present a list of configured groups, like this:

voicetrnix
Powering Open Telephony

04-Jan-2008 22:17:32

Manage users
Manage groups

Channel options
Backup options

Change my password

Logout user *admin*

Group Management

Groups are used to control access to call logs.

Group Name	Description	Action
adelaide	Adelaide staff	edit
sydney	Sydney staff	edit

Add group

From here, groups can be added (click the “Add group” button at the bottom right), edited (click the edit link for a specific group) or deleted (click the edit link for a specific group, then the “Delete” button at the bottom right of the edit screen).

The users belonging to the group, and the list of channels which those users can access, are both editable from the edit group screen.

3.4 Global Options

The global options screen allows the administrator to disable any menu options that are not expected to be used, in order to keep the interface simple. Some features such as network configuration will only be used when the system is initially configured, or may not be used at all.

voicetrnix
Powering Open Telephony

06-Jun-2008 18:20:18

Manage users
Manage groups

Global options
Channel names
Network setup
Backup options

Change my password

Logout user *admin*

Global Options

Use this screen to configure global options for the web interface.

Global Configuration ?

Network Configuration ?

User Access ?

Save values

You have the option of disabling the “Global options” menu item, the “Network setup” menu item and you can select to have either the “Channel names” or “Extension names” menu option (by setting User Access to “by channel” or “by extension” respectively). You should set User Access to “by channel” if your logger was configured to store recordings in per channel directories (the `--enable-channel-dirs` compile option), or set it to “by extension” if your logger was configured

to store recordings in per extension directories (the `--enable-extension-dirs` compile option).

If you switch off the “Global options” menu item, you can come back to this screen by going to this address in your web browser: `http://<ip address>/admin-prefs.mvc` .

3.5 Extension Names

If you do not have the “User access by extension” global option set, this screen will not be available (you will have a “Channel names” screen instead – see the Channel Names section below).

To make identification of each extensions easier throughout the web interface, each extension can have a name assigned to it. The screen to edit these details is accessed through the “Extension names” menu item in the administrator interface. Note carefully that you must press the “Save values” button at the bottom right, after editing any extension names on this screen.

Once extension names have been set, they will appear along with the number whenever this extension is displayed.

3.6 Channel Names

If you do not have the “User access by channel” global option set, this screen will not be available (you will have an “Extension names” screen instead – see the Extension Names section above).

To make identification of each channel easier throughout the web interface, each channel number can have a name assigned to it. The screen to edit these details is accessed through the “Channel names” menu option in the administrator interface. Note carefully that you must press the “Save values” button at the bottom right, after editing any channel names on this screen.

Once channel names have been set, they will appear along with the channel number whenever this channel is displayed.

3.7 Backups

Note that the backup function is relatively new, and as such has not seen as much testing in the field as other parts of the logger. While we have made every effort to ensure that it does what it is supposed to do, it may still contain bugs, and you should ensure that it is suitable for your purposes by your own testing. You have been warned.

The “Backup options” screen is accessed through the menu while logged in as an administrator. It allows easy configuration of regular scheduled backups to DVD of call records for all or selected channels.

Behind the scenes, this screen updates a cron job. More specifically, enabling it will create the file `/etc/cron.d/vtlogger` which will trigger the `/usr/local/lib/vtlogger/cron/backup.pl` script at the scheduled times. Each time this `backup.pl` script is run, it performs the following actions:

- deletes and recreates the temporary directory `/var/lib/vtlogger/recorder/vtlogbackup`
- adds hard links to each recording to be backed up under this directory (using hard links saves on disk space and copying time). The first backup will choose files within the last backup period. That is, it will choose the last month of files if monthly backups are selected, or it will choose the last day of file if daily backups are selected, etc. Subsequent backups will backup all files since the last successful backup was performed, regardless of the currently configured backup period.
- creates an HTML page with details for each call hyperlinked to the audio file
- attempts to write this tree to the optical drive

- emails the results of the burn to the configured (in the web interface) email addresses

It expects a blank writable single layer DVD to be in the DVD drive of the server prior to the scheduled time of the backup. It is possible to use larger or smaller media (such as dual layer DVDs or CDs) by changing the \$mediabytes variable in the `backup.pl` script. You should check each DVD after burning to ensure that the burn was successful. If the software reported a burn failure by email, it should attempt to backup the same files again along with the next backup. If it reported a burn success by email but the burn was not actually successful, you should re-burn the files (which should still be in the temporary directory) manually. A re-burn button does exist on the web interface, but the back end code is not yet ready.

In the web configuration page, hover your mouse pointer over the question mark for assistance with any options. Note carefully that you must press the “Save values” button at the bottom right for any changes to take effect.

3.8 Changing a Password

While logged in as any user, you can change your own password from the “Change my password” menu option. You will need to know your old password in order to change it. If you wish to change someone else's password, or do not know your current password, the “Manage users” menu option should be used instead (while logged in as an administrator).

3.9 Viewing Call Recordings

Viewing and listening to call recordings is done while logged on as a normal user (i.e. not an administrator). Select the “Call recordings” menu option to access the appropriate screen, then either select an appropriate time frame from the drop down list, or enter the dates and times using the calendars. To access the calendars, simply click the calendar icon, select a date and time, then click the “X” at the top right of the calendar to confirm the entered details. Next, select the channel that you wish to see/hear, and press the “Go” button. This will give you a list something like this:

voicetronix
Powering Open Telephony

04-Jan-2008 22:18:53

Call recordings
Change my password
Logout user wuser

Call Logs

Period: to Channel:

There are no calls for that channel in the selected period

For each call that appears in the listing, you can either listen to the file from within your browser, or download it for saving to disk and/or playback from, for example, Windows Media Player.

4 Operations

The command line interface can be used for a few administrative and maintenance tasks that are not handled by the web interface. Access to the command line interface can be either on the console, or via ssh from a system able to access to the server over a network.

4.1 Shutting Down the Server

It is important that the server is cleanly shut down before removing power from it – not doing so can result in filesystem corruption, which can lead to losing files and in severe cases even require a complete software reinstall to remedy. A clean shutdown can be performed by executing the following command as the root user:

```
# shutdown -h now
```

Alternately (and more easily), it can be done by pressing the power button on the front of the machine momentarily. Wait for the server to turn off completely (watch the lights on the front!) - about 5 to 10 seconds after telling it to halt (with either method) – before removing power.

4.2 Checking the System Status

You can check statistics about the running vtlogger process, such as how many calls it has taken, which channels are currently recording, and the configuration of the logger by running the following command for versions below 1.4.0 of vtlogger:

```
# vtstatus.sh
```

or, for version 1.4.0 and above of vtlogger:

```
# vtlogger_status
```

4.3 Manual Software Restart

A manual restart of the logger software should not usually be necessary. However, it can be useful to provide a known starting point if troubleshooting a problem. Both the logger itself and the wanrouter software should be restarted. First, stop the logger:

```
# /etc/init.d/vtlogger stop
```

Next, restart the wanrouter software:

```
# /etc/init.d/wanrouter restart
Shutting down wanpipe2 interface: wp2aft1
Shutting down wanpipe2 interface: wp2aft2
Shutting down wanpipe1 interface: wplaft1
Shutting down wanpipe1 interface: wplaft2
Shutting down device: wanpipe2
Shutting down device: wanpipe1
No devices running, Unloading Modules
Starting WAN Router...
Loading WAN drivers: wanpipe done.
Starting up device: wanpipe1
Starting up device: wanpipe2
Configuring interfaces: wplaft1 wplaft2
done.
Configuring interfaces: wp2aft1 wp2aft2
done.
```

To ensure that the wanrouter software has started correctly, check that it shows that both ports are in the *Connected* state in wanrouter's status output (as highlighted below):

```
# /etc/init.d/wanrouter status
```

```
Devices currently active:
```

```
wanpipe1 wanpipe2
```

```
Wanpipe Config:
```

Device name	Protocol Map	Adapter	IRQ	Slot/IO	If's	CLK	Baud rate	
wanpipe1	N/A	A101/1D/A102/2D/4/4D/8	3	11	2	EXT	0	
wanpipe2	N/A	A101/1D/A102/2D/4/4D/8	3	11	2	EXT	0	

```
Wanrouter Status:
```

Device name	Protocol	Station	Status	
wanpipe1	AFT HDLC	N/A	Connected	
wanpipe2	AFT HDLC	N/A	Connected	

If both ports are not showing as *Connected*, you should check your cabling and that your ISDN service is up.

Finally, start the logger again:

```
# /etc/init.d/vtlogger start
```

4.4 Full System Restart

A simple and safe way to restart the entire system is to run the *reboot* command:

```
# reboot
```

This will initiate a soft reboot and restart all the software automatically. No operator intervention is required.

4.5 Checking Logger Status

The *vtstatus.sh* (vtlogger version < 1.4) or *vtlogger_status* (vtlogger version >= 1.4) command shows information on whether or not the logger is running, channel activity, and the current build and runtime options. At the end of the line showing the process ID (PID) is a “spinner”, which will change every second if the logger is running. Channel activity is shown visually, with a “0” displayed for a channel that is not recording, and a “1” shown for a channel that is. The output should look something like this:

```
Voicetronix Call Logger v1.3.21
```

```
Calls recorded : 45
```

```
Vpb-driver-4.2-23
```

```
File write errors : 0 File open errors : 0
```

```
Process ID (pid) is 11201 \
```

```
Channel activity (0=no activity, 1=call recording)
```

```
1 to 10 : 1 0 0 0 0 0 1 1 1 0
11 to 20 : 0 0 1 0 0 0 0 0 0 0
21 to 30 : 0 0 0 0 0 0 0 0 0 0
```

```
Build Information :
```

```
-Vpb driver-4.2 mods enabled      -PRI Use channel directories
-Channel Activation (no VOX)      -PRI Fixed channels on startup
-BUSY directory disabled         -Multi-directory (Web2) filenames
-CAS logger disabled             -No shutdown on write error
-No LAME mp3 support             -SQLITE for database support
```

4.6 Cron Jobs

Cron jobs are run for various maintenance tasks, including deleting older call logs (to stop the disks from filling up), backups, and restarting the logger software in the event of a failure. The backup cron job is handled by the web interface, but the other two are configured manually. Their setup can be checked with the *crontab -l* command:

```
# crontab -l
*/5 * * * * /usr/local/sbin/checklogger.pl
0 0 * * 0 cd /var/tmp/logger/recorder;/usr/local/sbin/logpruner.sh
0 0 * * 0 cd /var/tmp/logger/recorder1;/usr/local/sbin/logpruner.sh
```

The *checklogger.pl* script is run every 5 minutes. This checks that the logger is running, and if it is not, it is restarted automatically and a notification email sent to the administrator. To change the email address of the administrator, edit the */usr/local/sbin/checklogger.pl* script.

The *logpruner.sh* script is run once a week to delete older call recordings so as to prevent the disk from filling up. How many days of recordings should be kept will depend on the size of your hard drive and the average daily requirements. By default, it deletes all but the last 30 days of recordings (this doesn't include days when there are no recordings, so this would be 6 weeks if there are no calls on weekends, for example). The jobs shown in the example configuration above delete calls from a logger configured to make two copies of each recording using the *MULTI_FILE_WRITE* option of the logger (a sort of poor man's RAID, if the two directories are configured to be mount points for separate hard drives). To change the number of days kept, edit the *DAYS* setting in the */usr/local/sbin/logpruner.sh* script. This will affect both copies of the files if it's configured as above.

5 System Maintenance

5.1 Disk Usage

You can check disk usage with the *df --si* command:

```
# df --si
Filesystem      Size  Used Avail Use% Mounted on
/dev/mapper/frank-root
                77G  1.3G   72G   2% /
```

varrun	265M	46k	265M	1%	/var/run
varlock	265M	0	265M	0%	/var/lock
udev	265M	74k	265M	1%	/dev
devshm	265M	0	265M	0%	/dev/shm
/dev/hda1	247M	17M	218M	8%	/boot
/dev/sdb1	300G	17G	283G	6%	/var/tmp/logger/recorder
/dev/sdc1	300G	17G	283G	6%	/var/tmp/logger/recorder1

The important lines to look at are the bottom two shown here, with */var/tmp/logger/recorder* and */var/tmp/logger/recorder1* on the right hand side. These are where the recordings are kept, and must not get full (i.e. 100% in the Use% column) or call recording will no longer work. See the section on cron jobs for the *logpruner.sh* script if this gets too full.

Assuming you don't use more than 20% of your disk space in any one week for call recordings (if you do, consider getting a larger data disk!), it is generally recommended to aim for about 80% disk usage. Adjust the *logpruner.sh* script to keep it around that level.

5.2 CPU Usage

You can check CPU loading with the *top* command:

```
# top
```

A reasonable CPU load for a 60 channel CAS logger is 0.35. CPU activity at 99% indicates a problem – do a restart if you see this level sustained.

6 Call Records

6.1 Location of Call Records

In vtlogger prior to version 1.4.0, calls are recorded to the */var/tmp/logger/recorder* directory by default, and if `MULTI_FILE_WRITE` is enabled, an identical copy is also recorded to the */var/tmp/logger/recorder1* directory in case of a single disk failure. In fact, `MULTI_FILE_WRITE` can be configured to allow more copies to */var/tmp/logger/recorder2*, */var/tmp/logger/recorder3*, and so on. Assuming each of these directories points to a separate physical disk, this can ensure that recordings are not lost in the face of multiple disk failures. Note that the web interface only uses the first copy.

From vtlogger version 1.4.0, these directories became */var/lib/vtlogger/recorder*, */var/lib/vtlogger/recorder1*, and so on.

6.2 Directory Structure

Under the various call recording directories (*/var/tmp/logger/recorder** or */var/lib/vtlogger/recorder**), the call logs are kept in a configurable directory hierarchy. The default structure is:

```
channelnumber/year/month/day/hour_minute_second_parameters.wav
```

For example:

```
0001/2008/02/22/13_30_45_4_36_05000_-43.00_-50.00_0.wav
```

6.3 Finding Call Records

It is possible to search through the call records files from the command line, however, the easiest way to find a specific call record is to use the web interface.

7 Voice Activity Detection (Vox)

Voice activity detection is not used in all loggers – PRI loggers can use the D channel instead and analogue loggers can use hook signalling. If you're using one of those, you can safely skip this entire chapter. For tied lines and other situations where D channel and hook signalling are not appropriate, this chapter discusses how to fine tune the voice activity detection settings for vtlogger.

7.1 Vox Basics

Channel activity is monitored constantly in a voice activated logger. Recording only occurs when vox level parameters are exceeded. Vox parameters are on-level, off-level and run-on time. These are stored in a file `/etc/vtlogger/channel.conf`. The contents of this file for a 30 channel logger look like this:

```
number_of_channel=30
channel_1_runon=5000
channel_1_onlevel=-43
channel_1_offlevel=-50
channel_1_compression=linear
channel_2_runon=5000
channel_2_onlevel=-43
channel_2_offlevel=-50
channel_2_compression=linear
channel_3_runon=5000
```

and so on down to the “channel_30” entries.

7.2 Vox Levels

There are two vox levels.

The “onlevel” determines the signal strength (dB) above which you want to start recording. The “offlevel” determines the signal strength (dB) below which you want to stop recording.

7.3 Vox Run-on Time

The run-on time is extra recording time (in milliseconds) after the Vox offlevel has been tripped.

Voice channel recordings have periods of silence. Sometimes we want these recorded to make the conversation complete. A normal conversation can have gaps of 5 or 10 seconds. It may not make sense to split up the conversation into separate call records. So we use the vox run-on time to cover the periods of silence. A typical run-on time is 5 seconds. If the signal goes over the on level again during that period, then the recording continues until the signal drops below the off level again, at which point the run-on timer is started again.

7.4 Vox for Logger

The signal strength on a idle voice channel should be well below the Vox On parameter. We don't want an idle channel to be recorded.

The signal strength on a active voice channel should be well above the Vox On parameter. We want an active channel to trigger the vox detection algorithm.

7.5 Modifying Vox parameters

Vox parameters can be modify by editing the file */etc/vtlogger/channel.conf*

This file contains vox parameters for every channel in the system. These are loaded when logger is started. If logger is already running, modify */etc/vtlogger/channel.conf*, then execute the following command to make the logger use the new parameters:

```
# vtupdatelevels.sh
```