

***Qnet Answering Machine, ver. 1.13, Oct 10 2002***

***Reference manual***

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# 1. Introduction

Qnet Answering Machine is designed as a telephone interface for Qnet Studio. It requires an ISDN line and an ISDN adapter. It allows to record contributions to be sent to Qnet Studio in different ways. It integrates also a basic Answering machine for general purposes. All the incoming and all the pre-recorded messages are recorded in 16 bit linear mono format at 8 kHz, except for the Live-in mode, where the message are saved in 16 bit linear mono format at 44.1 kHz,.

## 2. Modes of operation

Answering machine can answer to three different numbers and each number has a different function:

- 1) Reports service: aimed for journalists, this mode allows to record contributions to be sent to Qnet Studio
- 2) Answering machine service: this is a simple answering machine, which allows to leave messages. Optionally, the phone user can send a DTMF tone to add a digit to the output file name as an indication for a destination folder.
- 3) Studio Live-in: the journalist can enter directly into the live program of Qnet Studio with an optional initial jingle and a background.

### 2.1 Reports mode

This is the most advanced service and operates as follows:

As the phone user calls, the program answers and plays the file **Greeting.wav** waiting for the user to enter a code. After the user enters a code, the program plays the audio file associated to that user, and if that file is missing, it plays the file **Greet2.wav** and then the two user code digits. There are two series of digits. The first series is used for the all the digits except the last. The second series is used for the last digit. This gives the Answering machine a more natural way of speaking. After that the file **Startrec.wav** is played, immediately followed by a beep. If the user hasn't given a user code or the user code is not present in the list of the user codes, the file played will be **Nouser.wav**, instead (and the user won't be asked for the report code and the message will go to the **Main** folder instead of the **Reports** folder).

After that the file **Instrec.wav** will be played and the program will wait for a digit (DTMF tone). If the user presses "1", the program will ask again to record a message. If the user presses "2", the message will be confirmed and the program will go on, if the user presses "3", the recorded message will be played.

After the confirmation of the code with "2", the program will play the file **Startcod.wav** and wait for a six digit report code. If the code is invalid, the program will play the file **Invcode.wav**, and it will wait again for another code. If the code is okay, the program will play the file associated to the code, instead, or the file **Codeok.wav** followed by six digits, if the audio file for the report code hasn't been recorded. After that the file **Instrcod.wav** will be played. As before, the user can reenter the code with "1", confirm the code with "2" and listen again to the associated file with "3". After that the file **Instend.wav** will be played and the user will be given the option to terminate the process with "2" (or hanging up directly) or to record another message by pressing another key. **Goodbye.wav** will be played at the end.

If there is no space on the disk to leave the message, the program will play the file **Nospace.wav**.

The messages will be saved in the **Reports** folder in this format:

UURRRRRR- MMDD-hhmmss-count.wav

UU = user code

RRRRRR = report code

MM = month

DD = day

hh = hour

mm = minute

ss = second

count = total number of messages left by that user

or in the **Main** folder in this format:

YYYYMMDD-hhmmss-count.wav

YYYY = year

MM = month

DD = day

hh = hour

mm = minute

ss = second

count = total number of messages left by that phone number

## 2.2 Answering machine mode

When there is no folder defined, the program plays the file **Answermc.wav**, followed by a beep and then waits for a message. The message is terminated by a hang-up.

When there is one folder defined, the program plays the file **Destfold.wav** and waits for the user to press a digit. After that it plays the file associated to the folder (if not present, nothing is played) and then the file **Startrec.wav**, followed by a beep. The message is terminated by a hang-up.

The messages will be saved in the **Answermc** folder in this format

YYYYMMDD-hhmmss-count.wav

YYYY = year

MM = month

DD = day

hh = hour

mm = minute

ss = second

count = total number of messages left by that phone number

or in this format, if there is a folder number:

FYYYYMMDD-hhmmss-count.wav

F = folder number

YYYY = year

MM = month

DD = day

hh = hour

mm = minute

ss = second  
count = total number of messages left by that phone number

Folder number here represents only categorization and not physical folders present in the file system. Another external program is needed to move different files to different directories.

## 2.3 Live-in mode

The program plays first the file **Greetli.wav**. When a six digit code is entered, the file **Invcode.wav** is played and the code requested again, if it is wrong, otherwise the file associated to the code is played (or **Codeok.wav** followed by the six digits, when the file is missing) and the instructions given by the file **Instrcode.wav**. After confirmation the file **Startrec.wav** is played, followed by a beep and what the user says is sent to a file, whose name matches the code and the extension ".LI". The file will be recorded directly (with a real-time conversion) at the sampling frequency of 44.1 kHz. The recording terminates, when the user presses the key "0". After that the file **Goodbye.wav** will be played.

## 3. User interface

When started the program shows its log and a series of buttons. **Log ?** allows to search in the log. **Next** finds the next occurrence of the word searched. **Records** switches between log view and the list of recorded messages. **Play** plays the currently selected message (also if the selected item is a log line). **Settings** opens the settings window. **Reports**, **Answering machine** and **Live-in** activate or deactivate the respective services.

## 4. Records view

When the **Records** button is depressed, the program shows a list of the recordings present instead of the log. There are three buttons, which allow to choose between three kind of records (Repots, Main (= reports without a code), Answering machine). Live-in is not shown, because Live-in is aimed for direct sending to live program.

After choosing the date, the list of records in the chosen day is presented. These fields are present for the three kinds of records:

**Reports:** DATE, TIME, USER CODE, REPORT CODE, PHONE NUMBER, RECORDING LENGTH

**Main:** DATE, TIME, PHONE NUMBER, RECORDING LENGTH

**Answering machine:** DATE, TIME, PHONE NUMBER, FOLDER, RECORDING LENGTH

**Details** shows additional details for the selected record:

Number of records in the current month and number of total records for that user, that report code, that folder and that number, as applicable.

## 5. Settings

Settings are saved with the **Save** button. Old settings can be recovered with the **Recover** button.

## 5.1 Folders, Users, Codes and Live-in

These settings allow to enter the available folders, user, report and live-in codes. New entries are added with **New**, existing entries are edited with **Edit** and removed with **Remove**. As all of these entries have associated audio files, they can be recorded and played with the **Record** and **Play** buttons. Entries without an associated audio file are always preceded by an asterisk (\*) sign.

Folders are identified by a digit between 0 and 9 and a name (which has a meaning for the user, but not for the program). If no folder is present, the answering machine works in its simplest mode and no folder is requested to the phone user.

Users are identified by a two digit code. They have also a name, which has no meaning for the program.

Reports are identified by a six digit code. They have also a description, which has no meaning for the program.

Live-ins are identified by a six digit code. They have also a description, which has no meaning for the program.

## 5.2 Greetings

These are standard messages used by the program. It is advised to record all of them to understand better the behavior of the program.

## 5.3 Options

The phone numbers must be entered separately for every service. Every service will answer on its number.

All the incoming messages will be saved to the **In folder** under one of its subfolders **Reports**, **Main** and **Answermc**. Pre-recorded messages are saved in the **Messages folder**. **Live-in** messages will be saved separately in the **Live-in** folder. **Wait after beep** is a pause that the program waits after giving the beep, which signals the start of the recording, before starting the recording process. This delay depends upon the used ISDN adapter and must be tested. If the delay is too short, the beep will be heard in the recording. If the delay is too long, the initial words of the speaker will be lost.

**Reports on start**, **Ans. mc. on start** and **Live-in on start** determined which services will be active on program start. **Stop list** allows to choose a text file, where a list of undesired numbers will be entered (each phone number gets in its line). It can be edited with the notepad.

## 6. Answering machine dispatcher

This is a helper program that manages report files. Some processing can be done on the files and then they are copied to a preferred destination file. The play function won't work anymore in the Answering machine, if the dispatcher processes the file, because the original file will be deleted.

The **File/Reports** menu option shows all the reports available in the Answering machine. A double click on a report opens an entry dialog box, where the final destination of the

report file can be entered. The **Browse** button allows to browse between directories to find the right destination.

**File/Speech format** allows to specify the processing to be operated on the files. The sampling frequency can be left at **8 kHz** or it can be converted to **32, 44.1** or **48 kHz**. The file can be converted to **stereo** (the two channels will remain identical). The file can be encoded in **MPEG layer 2** or **MPEG layer 3** format or left in the linear **wave** format. If the file is encoded in MPEG, its **bit rate** must be specified. Stereo MPEG files can have the **joint** stereo encoding option. Silence can be suppressed at the beginning and at the end of the file, if its level is below a **threshold** given in dB (reasonable values go from -60 to -10 dB). Noises in the first and last piece of the file will be ignored when searching for the first and last significant sound. This **margin** must be entered in milliseconds. Before any encoding or sample rate conversion the file can pass through a dynamics processor, whose settings are available by pressing the **DP settings** button. Levels above a **threshold** will be compressed in dynamics, while levels below the threshold will be expanded. This allows to obtain a nearly constant volume level for all the possible signals (a high compression ratio is necessary for this, and in this case the operation is called also **limiting**), while canceling out unwanted noise. The **attack time** and **release time** specify the speed of reaction of the level sensor. Values that are too high for the **attack time** can produce distortion due to an exaggerate amplification (clipping), because the level sensor doesn't react immediately to high level signals. Values which are too low can produce distortion due to non-linear amplification of signals, but the consequences are usually less annoying. High values for the **release time** can make the final sound level too low after moments of high volume. Low values produce non linear distortion as for the **attack time**, but in this case they are more noticeable. **Look ahead** indicates the time advance of the level sensor in respect to the dynamic amplifier and is very useful to sense in advance instantaneous volume increments in the original signal. The **gain** control amplifies or attenuates the final signal. Usually the final signal should be attenuated to avoid clipping.