

How do I configure the NIPO ODIN Interview System client to use automatic dialling on a TAPI device?

What is this FAQ about?

This FAQ describes how to configure the NIPO ODIN Interview System (16 and 32 bit) for use with an installed telephony device. The system can be configured to use non-TAPI modem devices, but this FAQ does not describe that procedure. And if you are using an Invade, EIS or Sytel dialer, please refer to the ***NIPO Fieldwork System 1.03 Technical Reference***.

What is TAPI?

TAPI is short for *Telephone Application Programming Interface*. It is a communication interface between the installed telephony device and an application, enabling the latter to use it for telephony related features such as automatic dialling. Even though the application was not specifically designed to use any particular device it is a *generic* interface, making it possible for the application to dial on any telephony device as long as it supports TAPI.

This TAPI interface is referenced to as a TAPI *service* and it encompasses a set of drivers for the local PC.

What is a telephony device?

A telephony device is a piece of hardware hooked up to the computer that makes it possible to perform telephony operations (calling, talking and possibly recording) through a computer. This can either be

1. An *internal voice modem*, installed in the computer from which dialling should be performed;
2. An *external voice modem*, connected to the computer with a cable;
3. A *central dialer*, connected with all workstations through a network.

For 1 and 2, the TAPI service should have been installed automatically with the hardware installer of the telephony device. For 3, an installer should have been provided with the device that deploys the TAPI service on the workstations.

What can TAPI do for the ODIN Interview System?

This is a shortlist of *possible* capabilities of a TAPI device.

1. *Automate calls*. Through a single button press, the telephony device will call a telephone number.
2. *Automated non-response handling*. Some signals after a dialling attempt – such as no answer, a busy signal or an information tone, may be reported automatically.

TAPI devices with onboard sound card features may also be able to make the following possible:

3. *Wave playback.* This enables the workstation to play a wave sound file through the telephone line.
4. *Audio Recording.* This enables the workstation to record (parts of) the conversation.
5. *Watch & Listen.* With a sound card installed, the NIPO ODIN Watch system may listen to the conversation on the telephony device.

This is how the NIPO ODIN Interview System (16-bit and 32-bit) apply each of these capabilities:

1. At the introduction screen, a Dial button will appear. Upon pressing this button the telephone number provided by the CATI Master (either position 1L17 of the telephone record when using T-files or the TelephoneNumber field when using sample tables) will be dialled by the device. Once dialled, a hang-up button becomes available to end the call.
2. If a No Answer, Busy, Information Tone or Wrong Number signal is detected, this is reported back to the interview system and automatically coded under the correct non-response code.
3. In the ODIN script language, any wave file specified in a *PLAY command will be played over the telephone line.
4. In the ODIN script language, the command *REC may be used on a question or on (a part of) the questionnaire to start and stop recording. Data will be written to the B-file and may be played back in the coding module later.
5. The NIPO Watch station on a PC with sound card can listen to the conversation.

Note:

Wave playback, audio recording and listening aren't TAPI specific features and are therefore not discussed in this document. This document concentrates on automated dialling and automated non-response handling (features 1 and 2).

What TAPI devices are supported by NIPO software?

Currently we do not have a list of supported devices. In fact, theoretically there should be no need for such a list since the software simply supports TAPI - all it needs is a TAPI compliant telephony device. Practically, finding a suitable device should be a careful and thoughtful process. Check out the next paragraph on hardware.

If you have found or are already using a TAPI device worthy of a recommendation, we would appreciate you telling us at helpdesk@niposoftware.com so that we can update this document.

How and where do I find the right TAPI device?

Visit local hardware stores or browse the Internet for the solution you need. Ask yourself the following questions:

1. What would be more (cost) efficient: a central TAPI dialer or separate workstations devices?
2. Do you need analogue or digital device(s), depending on the phone lines?
3. Do you wish to apply auto dialling features?

4. Do you wish to play wave files through the telephone line?
5. Do you wish to be able to record interviews?
6. Do you wish to be able to listen to the interviews?
7. Can the device be hooked to a headset / is a headset provided?

To be able to use a telephony device with the NIPO Interview System, the specifications for a telephony device should list the following features. Note that some of these features are optional.

- A. *TAPI Compliant (required)*. Enables the NIPO Interview System to communicate with the telephony device.
- B. *Full Duplex (required)*. Enables communication over two lines simultaneously. Half Duplex modems would only allow one of two parties to speak, the other to listen (compare with Walkie-Talkies).
- C. *Automated response recognition (optional)*. Enables automatic non-response handling by the system.
- D. *Integrated sound card (optional)*. If the device lists an integrated sound card, it may be able to play wave sound over the telephone line and / or record the conversation. If recording is possible, the NIPO Watch Module may follow the conversation.

Note at D:

If you require conversation recording, make sure the TAPI device supports *Full Duplex recording*.

A few notes of warning:

1. In the past, many of our clients have discovered even though the box listed 'TAPI compliant', the overall TAPI capabilities did either not work correctly or did not support all of the device features.
2. Many telephony devices come with a test application that enables you to use all of the device's features without problem. These applications are however written specifically for the device. It does not guarantee those functions are supported through TAPI!
3. The box specifications tell little of the the sound quality, which is of key importance to your interviewers and respondents.

The safest way to decide whether the hardware answers your needs is to test it. In the case of internal or external (non-central) devices, It is recommended that you obtain a test model from the supplier before you buy a large quantity of devices for your call centre. One model should be enough to verify it works with the NIPO software and fullfils the wishes of your call centre. Be sure to test the sound quality extensively, especially when wave playback, recording and listening through the NIPO Watch module are required.

How do I set up a TAPI device for testing?

We recommend to perform the test on a single machine. Setting up the correct configuration may take some time and tweeking but eventually you will only need to copy a single configuration file towards other devices to get the TAPI system working.

Note:

There are slight differences between NIPO ODIN 16-bit and 32-bit clients. Where necessary this difference is indicated with *16-bit* or *32-bit*.

1. *Install the TAPI device.* This requires you to hook the TAPI device to the workstation or insert it in the mother board and run the installation software. For central dialers, prepare the dialer machine and install the client software on the test workstation.
2. *Prepare a test questionnaire file and telephone file.* A test questionnaire file does not need more than an introduction screen and a single question. The telephone file may be a single file containing multiple records with the same test telephone number (for example the telephone number of your mobile or a telephone nearby).
3. *Prepare an interviewer workstation.* For 16-bit, make sure the application directory contains the file `TAPIDIAL.DLL`. For 32-bit, this file is called `TAPIDL32.DLL`.
4. *Find the NIPOSYS.INI file.* This file will eventually contain all necessary settings to enable TAPI dialling. It can be found in either the application directory or in the `WINDOWS` directory. Make sure there is only one.

In the following sections, whenever you are asked to make changes to the `NIPOSYS.INI` file, make sure the NIPO Interview System is not running.

Open the file `NIPOSYS.INI` with e.g. Notepad. If this file does not exist, create a new file called `NIPOSYS.INI` and place it in the directory of the interview module executable or in the `WINDOWS` directory.

The initialisation file consists of so-called *sections*. This is basically a header below which all settings are listed. Sections are enclosed by square brackets. The order of the settings below a section is of no importance, as long as they are listed under the correct section.

For example, below is a bogus content example of an initialisation file:

```
[Main]
BackgroundColor=0
WindowTitle=NIPO Software

[Dialog]
EditBoxX=180
EditBoxY=24
```

The file above has a `[Main]` section containing the `BackgroundColor` setting which has a value of 0, and a `WindowTitle` setting containing the text "NIPO Software". There is also a `[Dialog]` section with the settings and values for `EditBoxX` and `EditBoxY`.

Enabling TAPI for the NIPO Interview System

For *16-bit*, section `[ODINS]`, add this line:

```
OdinsHook3=TAPIDIAL.DLL,DIAENTRY
```

For *32-bit*, section `[OdQes]`, add this line:

```
DialDLL=TAPIDL32.DLL
```

These settings assume that the related TAPI dial DLL is located in the interview system application directory. If this is not the case, specify the full path. An example for 16-bit:

```
OdinsHook3=N:\CATINET\TAPIDIAL.DLL,DIAENTRY
```

At this point it's highly recommended to switch on logging of the TAPI procedure on the NIPO Interview System client. The 32-bit client logs all TAPI related information into the *OdQes* log – please refer to the **NIPO CATI Client 5.01 Technical Reference** on how to set up this log.

For 16-bit, TAPI logging can be switched on in the initialisation file. You will have to specify a full path and filename to the log file. In the [General] section:

```
DialComLog=[path\filename.ext]
```

Make sure that the file path is according to the 8.3 file format (no more than 8 bytes for the file name and 3 for the extension, no special characters and spaces). Also make sure that the directories in the path exist. E.g.:

```
DialComLog=C:\ODINS\TAPILOG.TXT
```

This will tell ODINS to write a log file containing the results of TAPI calls.

When the initialisation file has been saved and closed, start the NIPO Interview System with the test questionnaire and telephone file (stand alone). On the introduction screen, a Dial button should now appear, enabling you to dial the telephone number on display.

**The button is pressed, but nothing happens / the Dial button doesn't appear at all.
What now?**

This is usually the result of using the incorrect TAPI service. Most computers will have several TAPI services installed by default, some of which may be generic TAPI interfaces. The ODIN Interview System checks all lines for availability, but it tries to use the first line on which it finds a signal. However, although the generic TAPI service may report a signal, it is often not the service that belongs to the device.

If you have switched on logging, as was suggested above, close the NIPO Interview System and open its log file with a text editor. Search for a section, not too far from the log start, that resembles either of the next examples.

For 16-bit:

```
0 INIT LINE
0 CHECK 5 LINES
0 LINE 1, PROVIDER NDPROXY , NAME WAN Miniport (L2TP)
0 NO VOICE
0 LINE 2, PROVIDER NDPROXY , NAME LPT1T
```

```
0 NO VOICE
0 LINE 3, PROVIDER Microsoft Multicast Conference TAPI
Service Provider , NAME IPCONF LINE
0 LINE 4, PROVIDER Chatalot Duplex Board TAPI Service
Provider, NAME IPCONF LINE2
0 USING LINE 3
```

For 32-bit:

```
2005/07/04 15:12:09.907 000007A4 Dial DLL used: TAPIDL32.DLL
2005/07/04 15:12:10.001 000007C8 [TAPI] lineInit done
2005/07/04 15:12:10.001 000007C8 [TAPI] Check 5 lines
2005/07/04 15:12:10.001 000007C8 [ERROR] Tapi Error :
8000000C (LINEERR_INCOMPATIBLEAPIVERSION)
lineNegotiateAPIVersion
2005/07/04 15:12:10.016 000007C8 [TAPI] Line 1 , Provider
NDPROXY , Name WAN Miniport (L2TP)
2005/07/04 15:12:10.016 000007C8 [TAPI] no voice
2005/07/04 15:12:10.016 000007C8 [TAPI] Line 2 , Provider
NDPROXY , Name LPT1T
2005/07/04 15:12:10.016 000007C8 [TAPI] no voice
2005/07/04 15:12:10.063 000007C8 [TAPI] Line 3 , Provider
Microsoft H.323 TAPI Service Provider , Name H323 Line
2005/07/04 15:12:10.078 LINE 4, Provider Chatalot Duplex Board
TAPI Service Provider, NameIPCONF LINE2
2005/07/04 15:12:10.091 000007C8 [TAPI] Using line 3
```

As you can see in the log examples above, the system has found two TAPI services that returned a signal. However, it uses line 3 where line 4 is the actual service belonging to the correct device (the name is just an example – yours may read a different name).

To make sure the ODIN Interview System uses the correct service, the TAPI Service provider name needs to be added to the initialisation file. Copy and paste the name of the service provider for which you think it represents the installed telephony device.

```
[General]
```

```
TapiProvider=Chatalot Duplex Board TAPI Service Provider
```

Keep in mind that the name needs to be exactly as found in the log. Save, and test again.

Displaying the dialling progress

Some telephony devices will not pass any sound through the headsets until the line has been picked up by the respondent. This may be inconvenient to the interviewer, who might notice late at what moment the line control is switched to him / her.

For this reason you can make the interview system display the *call progress*. The interviewer will see a message box that displays the four stages of calling progress: *dialling*, *ringing*,

proceeding and *connected*. The last message, *connected*, is displayed for a configurable amount of time – after this message, the interview can be started.

Add the following line to the initialisation file:

```
[ODINS]
WaitDialConnected=10
```

This tells the system to display the call progress and displays the connected message for 1 second. Note that time is recorded in tenths of seconds.

Note:

This setting only works on the 16-bit version of the NIPO Interview System. Also note that not all TAPI devices support call progression feedback.

Configuring automatic non-response handling

Some TAPI devices are able to recognise No Answer, Busy, Information Tone and Bad Number signals on the telephone line. With a few lines in the initialisation file, the NIPO ODIN Interview System will automatically code these under the correct non-response codes.

Add the following lines in the [Odins] section for 16-bit or the [OdQes] section for 32-bit:

```
AutoResponseNoAnswer=1
AutoResponseBusy=3
AutoResponseBadAddress=4
AutoResponseReject=4
AutoResponseUnreach=4
```

The settings used above will map to the CATI default response codes for No Answer, Busy and Wrong Number. If you have different settings, change those above to reflect the proper response codes.

`AutoResponseNoAnswer` and `AutoResponseBusy` should be self-explanatory. `AutoResponseBadAddress` refers to telephone numbers for which an information tone signal was returned. `AutoResponseReject` and `AutoResponseUnreach` are responses typically returned by a digital telephony network, and report the network's inability to reach a particular telephone number. This does not necessarily mean that the number is bad, so you may want to add an additional response code for those to be tried at a later time.

Note #1:

The settings assume that the response codes used are the same for all surveys!

Note #2:

Automated non-response reporting may not be supported by your TAPI device.

Configuring the time-out for the No Answer autoresponse

As one can imagine, the No Answer autoresponse requires the TAPI device to wait for a particular amount of time, or maybe even rings, before it decides that there is no answer.

The time-out for this waiting period can not be configured through the NIPO Interview System initialisation file. Refer to the TAPI device manual to see how this time-out is configured. Typically we would recommend a waiting time of about 20 seconds maximum, which is usually the time in which an answering device will respond to the call.

Opening and closing the TAPI line in between calls

Some TAPI devices may not reset the open line properly in between calls. If you experience such issues, you may want to automatically reset the line after a call. Add the following setting, but only if you experience problems between consecutive calls:

```
[General]
TapiCloseAndOpen=1
```

Note: This setting only works on the 16-bit version of the NIPO Interview System.

Enabling TAPI dialling through the *Dial Digit* menu option

In the NIPO Interview System menu there is an option to allow *digit dialling*. This enables the interviewer to manually select single digits to dial on the TAPI device.

The *Dial Digit* menu option needs to be specifically enabled to allow manual digit dialling through the TAPI interface. Add the following line in the [Odins] section for 16-bit or the [OdQes] section for 32-bit:

```
DigitsUsingDialDLL=1
```

Setting a predial number

In case your telephony studio always needs to a specific digit for an outside line, you can specify this in the initialisation file. Add the following line in the [Odins] section for 16-bit or the [OdQes] section for 32-bit:

```
PreDial=9
```

Any number dialled through the Dial button will be preceded by a 9. Note that the predial can be of any length.

Note: This setting is related to telephony in general, not TAPI in specific.

Setting a predial number for manually entered numbers

Interviewers are allowed to specify a different number to dial through the system menu. This telephone number is not automatically preceded by the `PreDial` number. To make sure the dialled number is preceded, add the following line in the [Odins] section for 16-bit or the [OdQes] section for 32-bit:

```
PreDial2=9
```

This predial can be of any length.

Note: This setting is related to telephony in general, not TAPI in specific.

Setting the local area code

If the workstation is calling to the same area as where the workstation is located, in some telephony network situations it might be erroneous to dial the area code. You can prevent the area code from being dialled. In this setting you always specify the area code where the workstation is located. Add the following line in the [Odins] section for 16-bit or the [OdQes] section for 32-bit:

```
HomeNet=020
```

If the area code 020 is found in the telephone number, it is not dialled.

Note: This setting is related to telephony in general, not TAPI in specific.

Example contents of the initialisation file

For the examples below we have the following hypothetical conditions:

1. The TAPI device service name is 'Chatalot Duplex Board TAPI Service Provider'
2. The TAPI device supports automated response handling
3. In the call centre, a zero needs to be dialled for an external line
4. We wish to enable digit dialling

This is an example of NIPOSYS.INI for the 16-bit version of the NIPO Interview System:

```
[General]
TapiProvider=Chatalot Duplex Board TAPI Service Provider
DialComLog=C:\ODINS\COMLOG.TXT
```

```
[Odins]
OdinsHook3=TAPIDIAL.DLL, DIAENTRY
AutoResponseNoAnswer=1
AutoResponseBusy=3
AutoResponseBadAddress=4
AutoResponseReject=4
AutoResponseUnreach=4
DigitsUsingDialDLL=1
PreDial=0
PreDial2=0
```

And this an example of NIPOSYS.INI for the 32-bit version of the NIPO Interview System:

```
[General]
TapiProvider=Chatalot Duplex Board TAPI Service Provider
```

[OdQes]
 DialDLL=TAPIDL32.DLL
 AutoResponseNoAnswer=1
 AutoResponseBusy=3
 AutoResponseBadAddress=4
 AutoResponseReject=4
 AutoResponseUnreach=4
 DigitsUsingDialDLL=1
 PreDial=0
 PreDial2=0

Overview of TAPI and telephony related initialisation file settings

Key	16-bit section	32-bit section	Description (and suggested value)
AutoResponseBadAddress	[Odins]	[OdQes]	Autoresponse for bad number (4)
AutoResponseBusy	[Odins]	[OdQes]	Autoresponse for busy line (3)
AutoResponseNoAnswer	[Odins]	[OdQes]	Autoresponse for no answer (1)
AutoResponseReject	[Odins]	[OdQes]	Autoresponse, other (4)
AutoResponseUnreach	[Odins]	[OdQes]	Autoresponse, other (4)
DialComLog	[General]	-	Dialling log file path
DialDLL	-	[OdQes]	Dial DLL path, 32 bit (TAPIDL32.DLL)
DigitsUsingDialDLL	[Odins]	[OdQes]	Enable digit dialling
HomeNet	[Odins]	[OdQes]	Specify area code of current location
OdinsHook3	[Odins]	-	Dial DLL path, 16 bit (TAPIDIAL.DLL, DIALENTY)
PreDial	[Odins]	[OdQes]	Predial for external line
PreDial2	[Odins]	[OdQes]	Predial for external line, manual dial
TapiCloseAndOpen	[General]	-	Resets TAPI device between calls
TapiProvider	[General]	[OdQes]	TAPI Service name
WaitDialConnected	[Odins]	-	Enable progress report (10)