



CLARINET - BOOK

ISDN Test Equipment Training

Version 10.*

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Overview

- The Clarinet-ISDN is a very versatile analyser and simulator for ISDN, SS#7, Q-SIG, V5.x, ATM, VoIP, H.323 and SIP.
- Up to seven interface pods can be controlled simultaneously from one software manager.
- Selecting Clarinet 10.* and then double clicking on the Clarinet Icon accesses the software manager.
- Each test you create is called a PROFILE. (.acp file).

For Example ISDN Profiles Define:

Network Simulation for Basic Rate ISDN	: Isdn_etsi_simu_net_s0.acp
User Simulation for Basic Rate ISDN	: Isdn_etsi_simu_usr_s0.acp
Passive Monitor for Basic Rate ISDN	: Isdn_etsi_mon_s0.acp
Network Simulation for Primary ISDN	: Isdn_etsi_simu_net_t2.acp
PBX Simulation for Primary Rate ISDN	: Isdn_etsi_simu_usr_t2.acp
Passive Monitor for Primary Rate ISDN	: Isdn_etsi_simu_mon_s2.acp

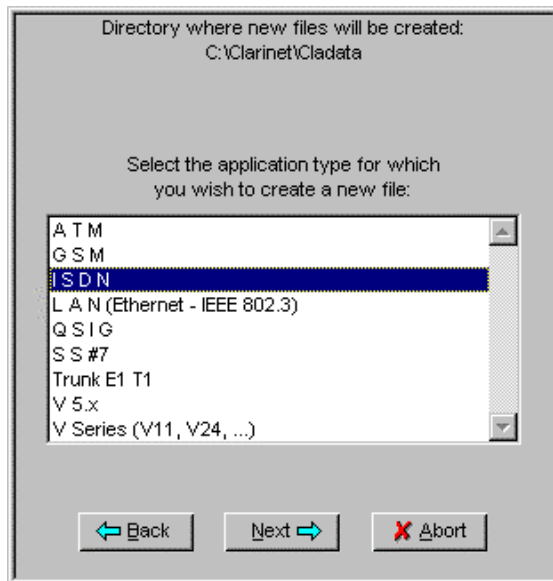
- The user can also create an unlimited number of display and record filters to show the information in exactly the form required. These filters may be allocated to any Profile.
- Filters can display both D channel (signalling) and B channel (user data) information.
- Each time a Profile is executed it creates an Event file (.ace file).
- An unlimited number of event files can be saved to hard disk.
- Profiles can be chained together for automatic test routines.
- Simulation Profiles can define up to 32 outgoing calls, all of which can be transmitted simultaneously with a similar or different call setup. It is also possible to generate outgoing calls of any type automatically on receipt of incoming calls of any type.
- A handset, DTMF tones, digital port, loop, Bit Error Rate Test and X.25 data generator are just some of the sources that can be connected to incoming or outgoing calls. (ISDN pod)
- Single port Clarinet-ISDN systems have two receive connections so it is possible to monitor both directions of message transmission.
- The Clarinet can monitor ABCD bits in timeslot 16 for all channels (CAS).
- ISDN, SS#7 (ETSI ISUP), V5.1, V5.2 and Q-Sig protocols may be simulated.
- Powerful Conformance Test Packages are available for most protocols supported by the Clarinet making it an ideal 'self declaration' tool.
- Captured events can also be viewed and re-filtered off line.
- Statistics filters can be created by the user to count protocol messages at any layer.
- On-line context sensitive help functions greatly simplify operation.

Building a Profile to Generate Calls

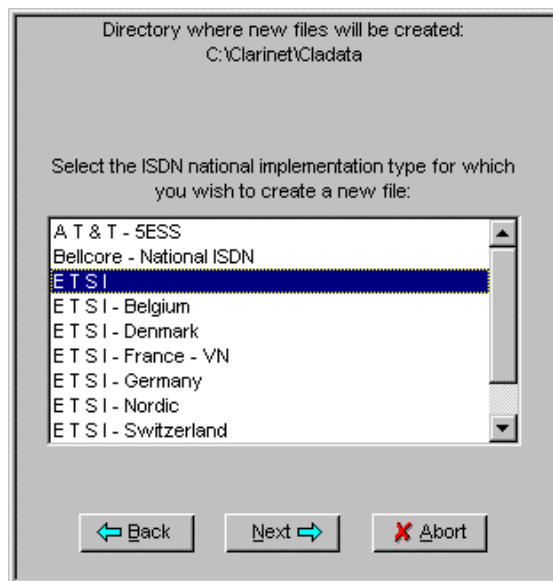
1. From Windows 98, 2000, XP Program Manager select **Clarinet 10.*** and click on the **Clarinet Icon**.
2. The Clarinet Manager Dialog 1 window opens, click on **Profile**, then click on **New**.



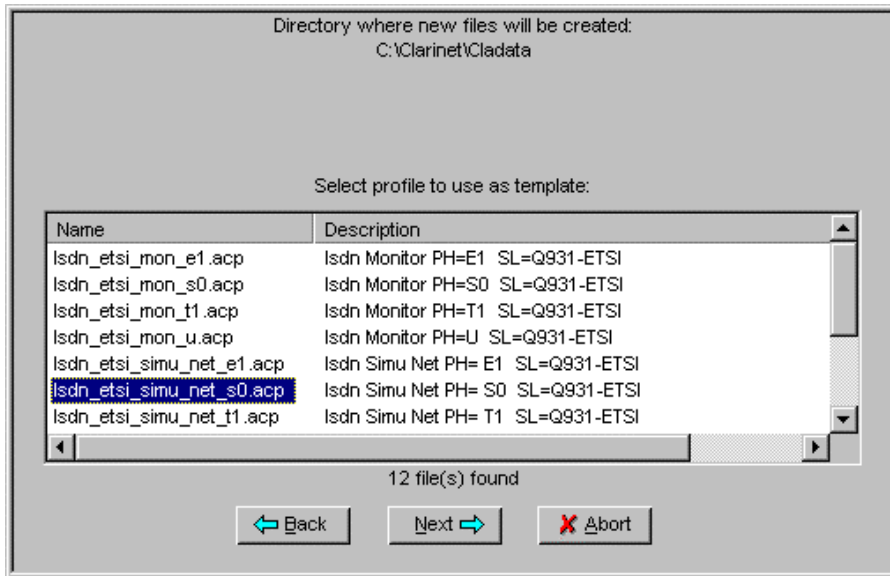
3. Select an application type e.g. **ISDN** and then click on **Next**.



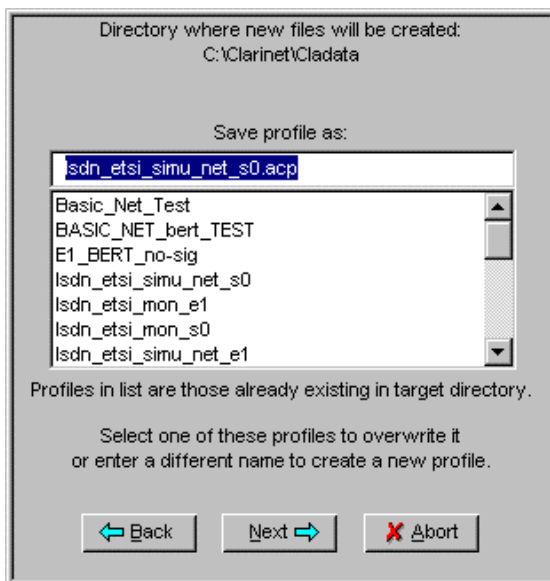
4. Select an implementation type e.g. **ETSI** and then click on **Next**.



5. Select a pre-written Profile to use as a template and then click on **Next**.

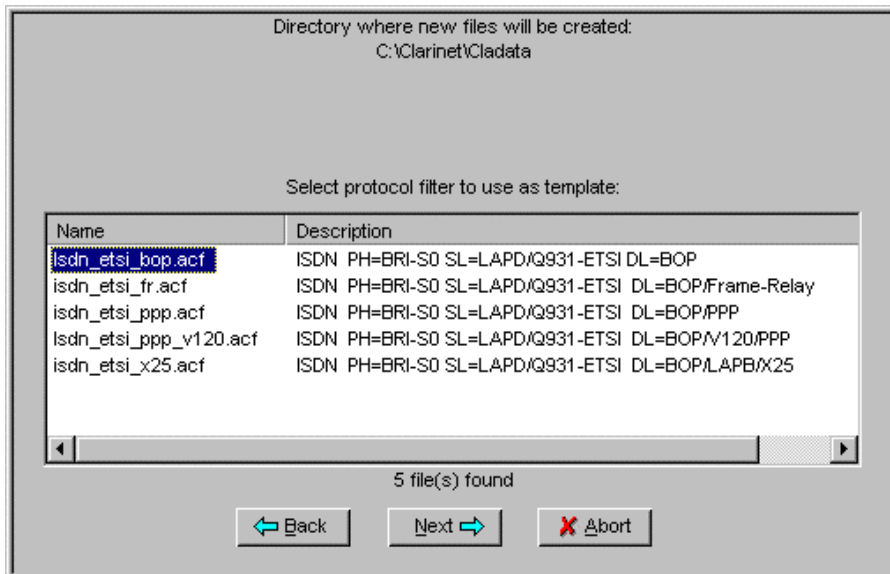


6. Type in a new name for the Profile to avoid overwriting any previously written Profiles, click on **Next**.



7. A window will open asking you whether you want a filter to be associated with the new Profile. Click on **Yes**.

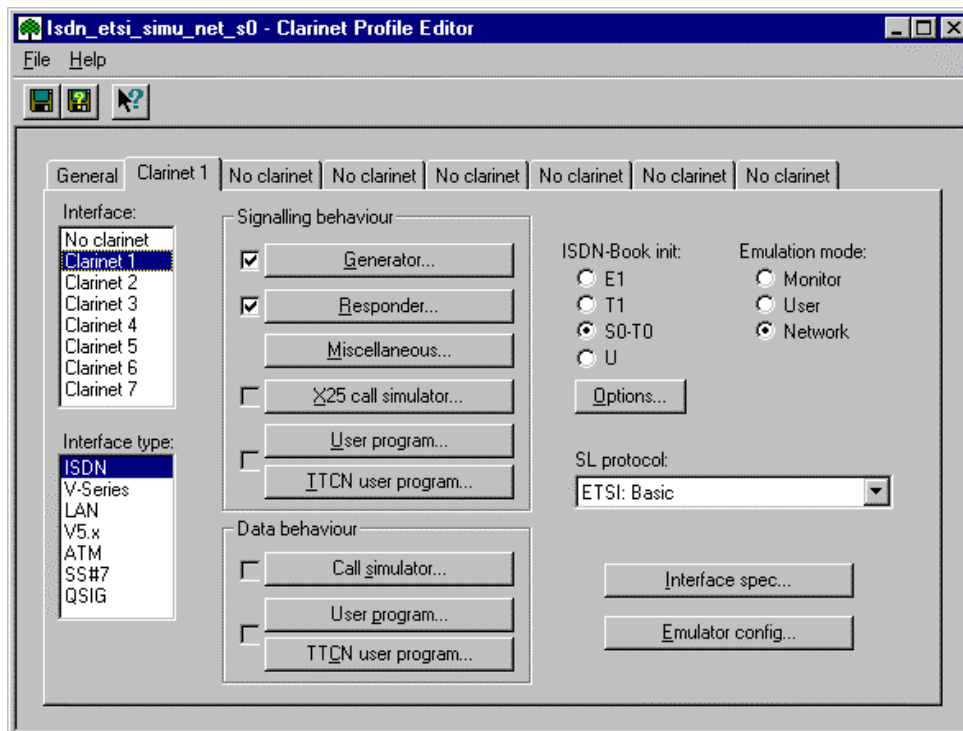
8. Select a standard Filter from the list and then click on **Next**.



9. A window will open prompting you to enter a name to the Filter. Use the name provided or enter a new name and click on **Next**.

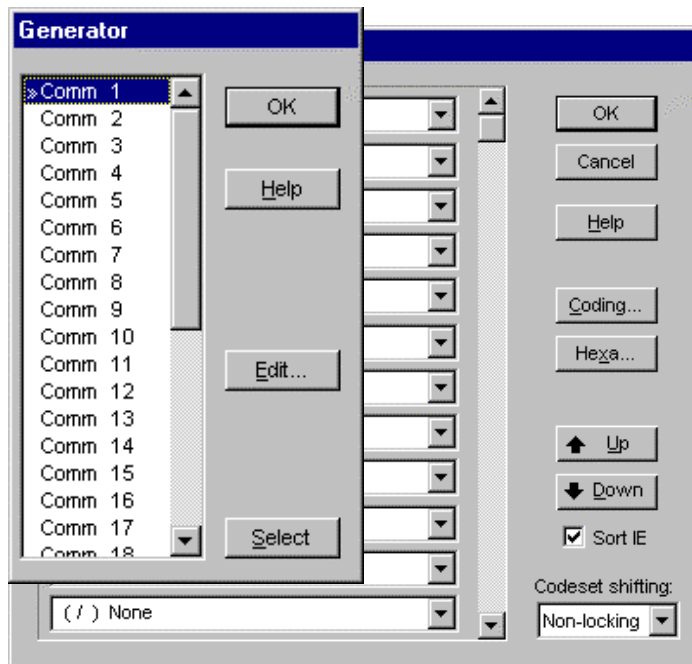
10. You are now asked if you would like to define a statistics filter with your Profile. If not required click on **No**.

11. When the Profile Editor window opens click on **Generator**.



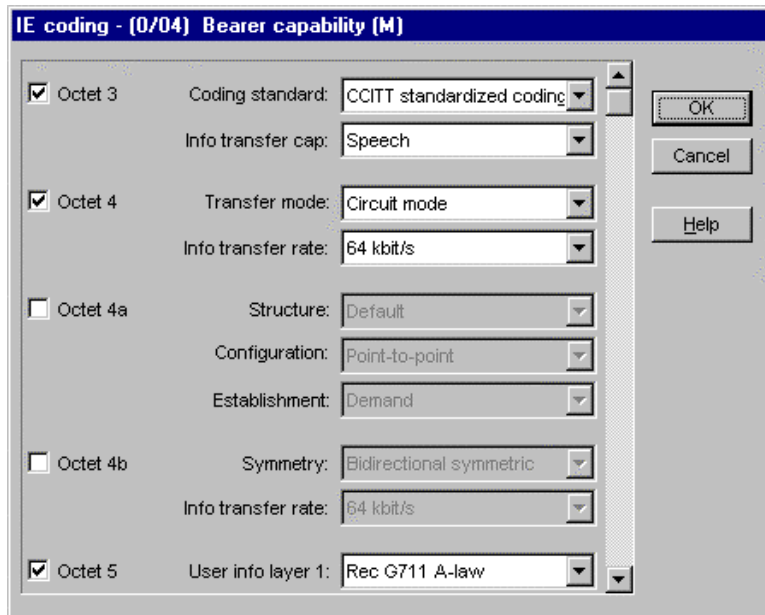
12. The window that appears provides access to the 32 independent outgoing communications which can be generated in any ISDN Profile. Select **Comm 1** to edit the first communication and click on **Edit**. If any more communications are required you can click on the right hand mouse button, select copy, move down to any other communication, click the right hand mouse button, and select paste. The entire call content is now copied to the new communication. You may want to edit this new call and change the called party number or active source as required.

13. Click on **Setup**.



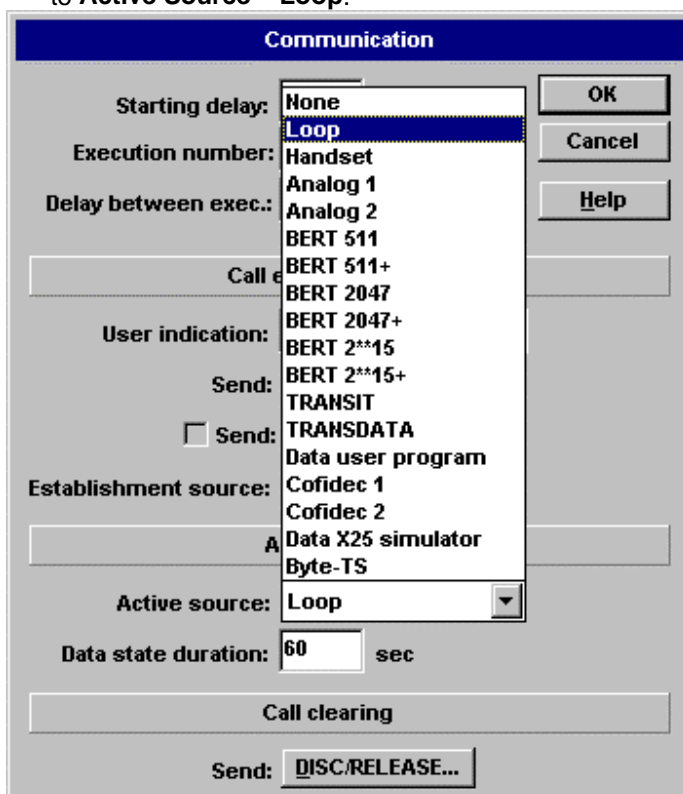
13. You can now edit any information elements used in the call setup. Each Information Element is followed by either an 'M' or an 'O' this indicates whether the IE is mandatory or optional, note some are followed with 'OM' this means they are mandatory for network applications and only optional for terminal applications. To add another Information Element click on the **Down arrow** next to any 'none' position. You are now presented with a list of all Information Elements supported by the protocol used. To select one just point your cursor at it and click the mouse button. The selected IE will go into the list. To edit any Information Element contents, select the required IE by pointing the cursor at it and pressing the mouse button. Click on **Coding**. You are now presented with the information element contents and you can change anything. IE contents may also be edited in HEX by Clicking on the Hexa button. This allows for invalid coding.

14. Click to select **Bearer Capability** and click on **Coding**.



15. The default Bearer Capability is configured for a standard speech call as shown above. To change to a Data Call click on the **Down arrow** next to 'info transfer cap: Speech' and select **unrestricted digital info** from the list. Now click on the **tick** in the box next to Octet 5 to deselect the Rec G711 A-law codec, which is not required. You have now configured the Bearer Capability for an unrestricted Digital Data Call. All information elements may be edited in this way.

16. Click **OK** to return to the Communication window. Under Active State, click on the **Down arrow** next to **Active Source – Loop**.



17. **Select an option from the list**, e.g. handset (for speech), loop or Cofidec (for tone generation). Remember that you only have one handset. The selected option will be connected when your call goes out. Click to make your selection.

18. Click on OK until you return to the 'Clarinet Profile Editor' screen and click on the Diskette Icon in the top left hand corner to save changes made to the Profile. Now close the Clarinet Profile Editor.

Communication Window Explained

Starting delay: - is the length of time after you execute the Profile before the communication is launched.

Execution number: - is how many times the communication is repeated. If an execution number is entered, select a delay between executions.

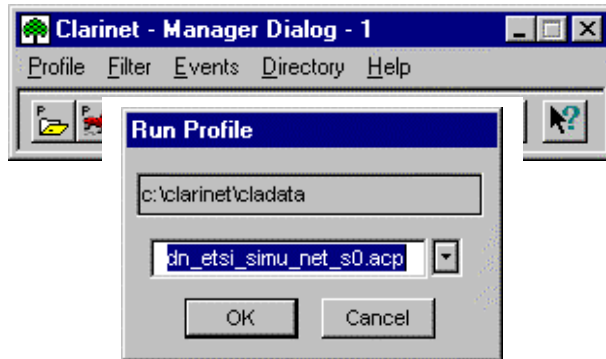
Data state duration: - is how long the call stays active and by default is set to 60 seconds after which it will be cleared with the cause selected within DISC/RELEASE.

- Notes:
- 1) If no digits are entered in the 'Starting delay' field then the communication must be sent manually from the real time option screens (see page 12).

 - 2) If no digits are entered in the 'Data state duration' field then the communication must be cleared manually from the real time option screens (see page 12).

Running a Profile

1. To run a Profile, return to the Clarinet Manager Dialog- 1 window and click on the **Red Horse**. The last Profile that you edited will now appear in the selection window. To run this Profile click **OK**.



Real Time Option Screen

When a Profile is running you will notice that the Clarinet Manager Dialog – 1 window enlarges to reveal some real-time options.

1. Click on + next to SL-Q931 to access the Signalling Link options which include:

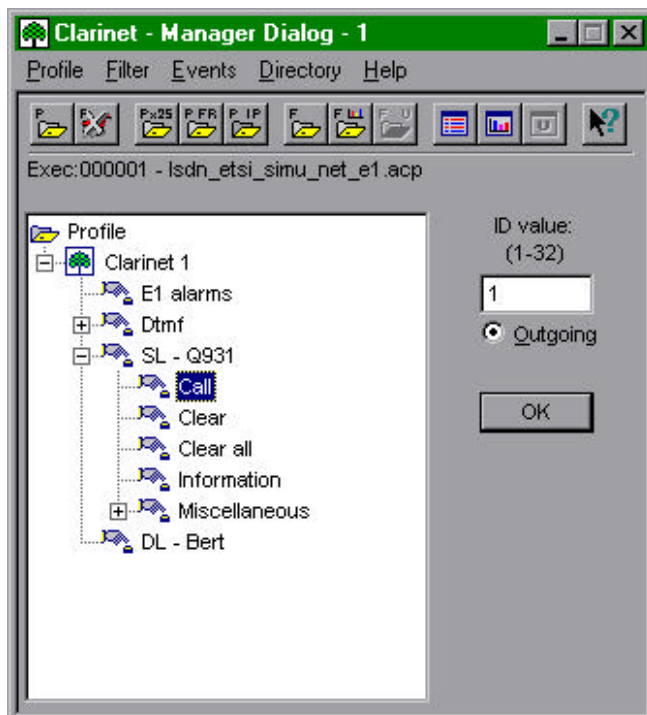
Call – to manually launch a communication

Clear – to manually clear a communication

Clear all – to manually clear all communications

Information – to manually send pre-configured information messages

Miscellaneous – to manually send pre-configured miscellaneous messages (Suspend, Resume, Restart..etc)



Example - Generate and Clear a Call Manually

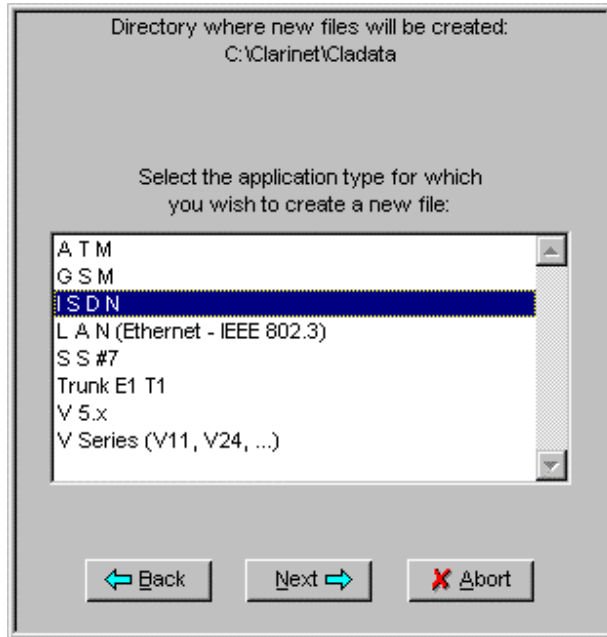
1. Click on the + next to SL-Q931, click on **Call**. Enter the communication number that you wish to generate (1 – 32). Click on **OK** and the call will immediately be launched.
2. To clear the call click on **Clear**. Enter the communication number that you wish to clear (1 – 32). Click on **OK** and the call will immediately be cleared

How to Monitor a Link

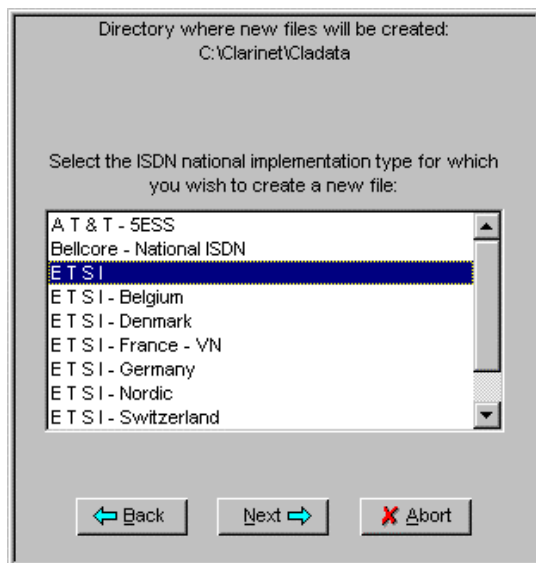
1. From the Clarinet - Manager Dialog – 1 window, click on **Profile** and click on **New**.



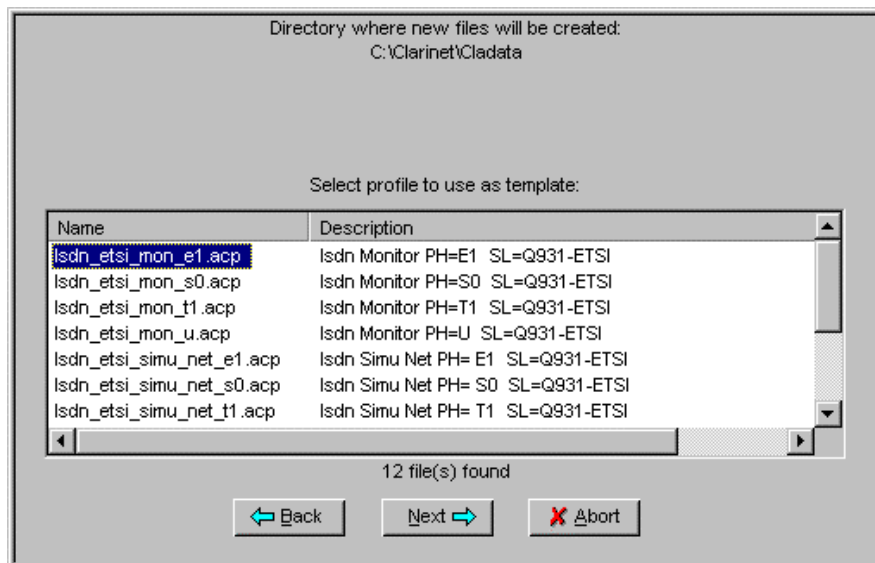
2. Select an 'application type' e.g. ISDN and then click on **Next**.



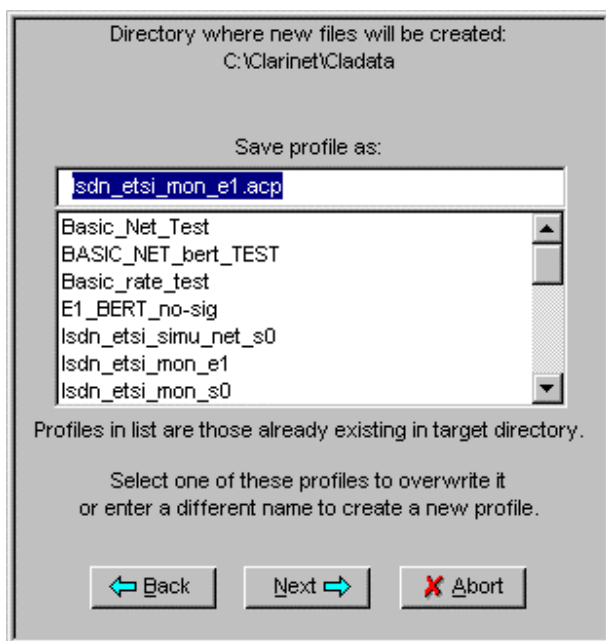
3. Select an 'implementation type' e.g. 'ETSI' and then click on **Next**.



4. Select a pre-written Profile to use as a template and then click on **Next**.



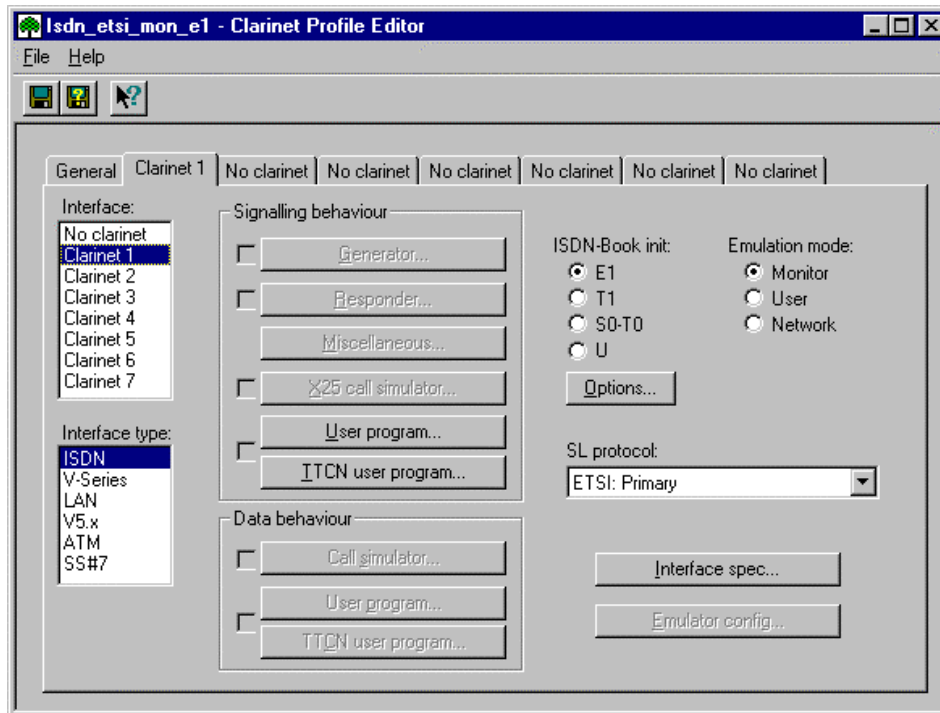
5. **Enter a new name** if you do not wish to overwrite the selected Profile. Click on **Next**.



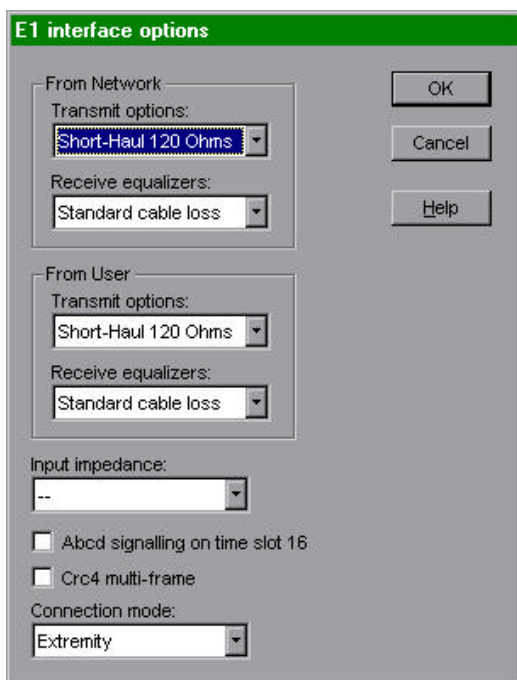
6. You will be prompted as to whether you want a protocol filter to be associated with your new Profile. Click on **Yes** and select the standard **ISDN_ETSI_BOP.ACF** filter from the list and click **Next**.

7. You will be prompted as to whether you want to record statistics events. Click on **No**.

8. Click on **Options**.



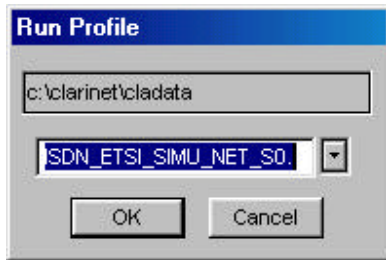
9. Select the required parameters. Click on **OK**.



10. To run the Profile, click on the Red Horse.



11. Select your Profile and click on **OK**. The Profile is now running and all the events will be recorded.

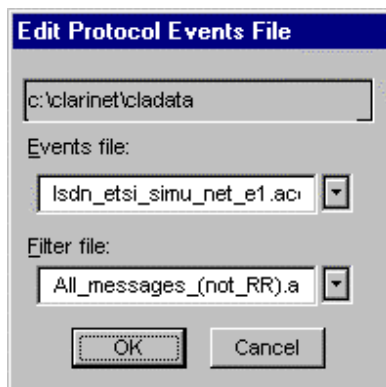


To Edit A Recorded Event

1. From the Clarinet - Manager Dialog – 1 window click on the **fourth icon from the right** to open a protocol event file.



2. Select the required Events and Filter files. Click on **OK**.



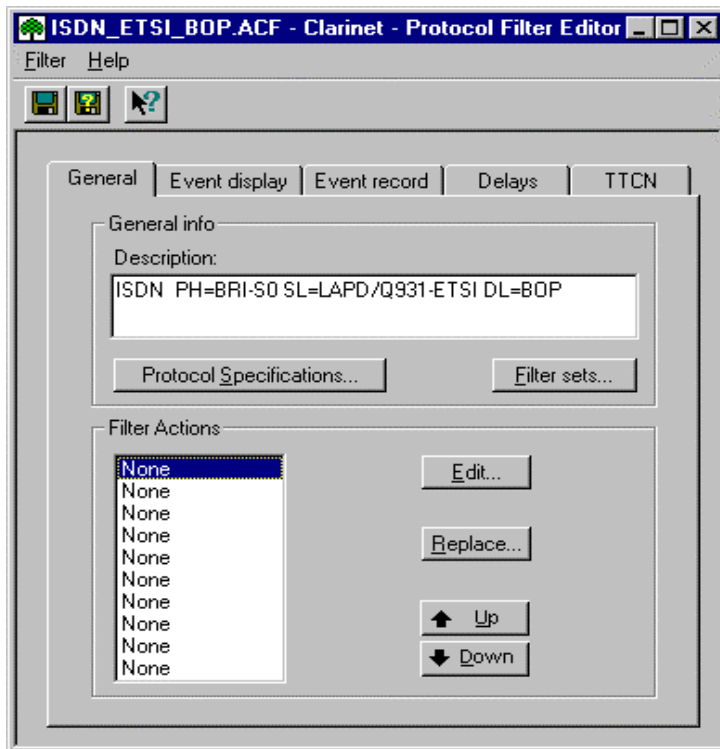
3. Your file will be displayed for you to scroll up and down, search for text, search for next match....etc.


To Print A Recorded Event File

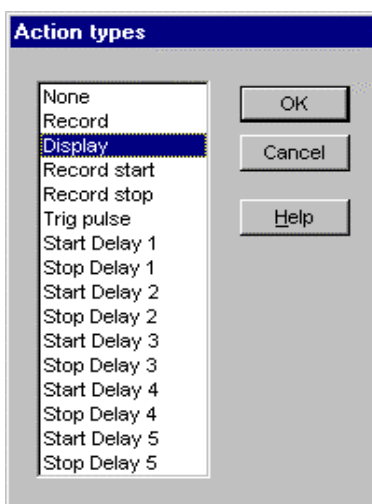
1. Once the event has been opened on the display, move the cursor to the point at which you would like your trace file to begin.
2. Now press 'F6' to insert a Clipboard marker in this position. Move the cursor to the end of your required trace and press 'F6' again. Enter a filename for your ASCII trace, e.g. trace.doc. Your ASCII file can be found in the C:\Clarinet\Cladata directory and can be printed.

Filter Creation

The Clarinet Filter may be edited before or while a Profile is running. It allows the user to choose the level of detail, preferred display colours, suppress messages and search for events.

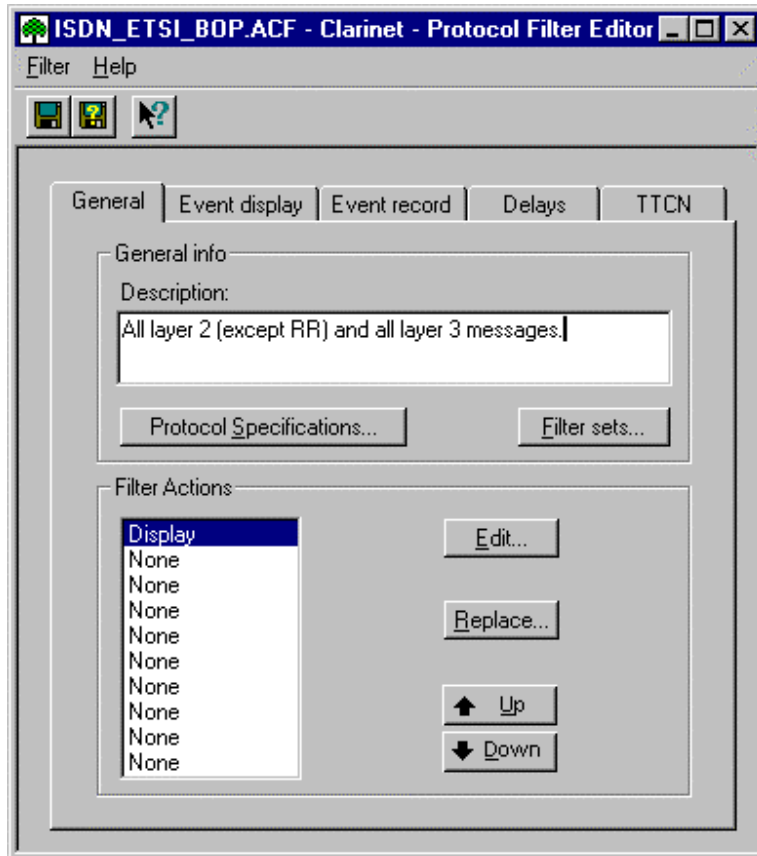


1. To edit the protocol filter just click on the **yellow F icon**. 
2. Click on the **Event Display tab** if you wish to remove protocol layers from the display or to change attributes (display colours).
3. If you wish to remove certain messages from the display you must create a display filter as shown below. Click on **Replace** from the window shown above.
4. Click on **Display** and then click **OK**.

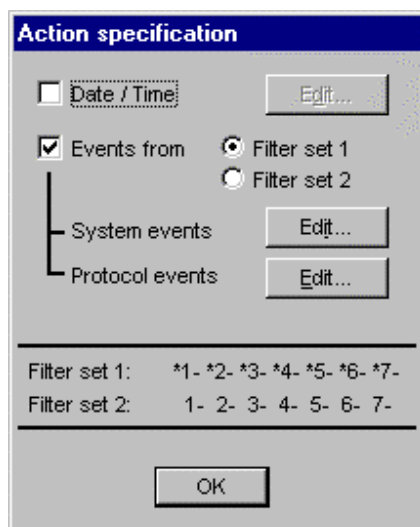


Note: The filter settings described below will filter OUT Receiver Ready (RR) messages and display all other layer 2 and layer 3 messages.

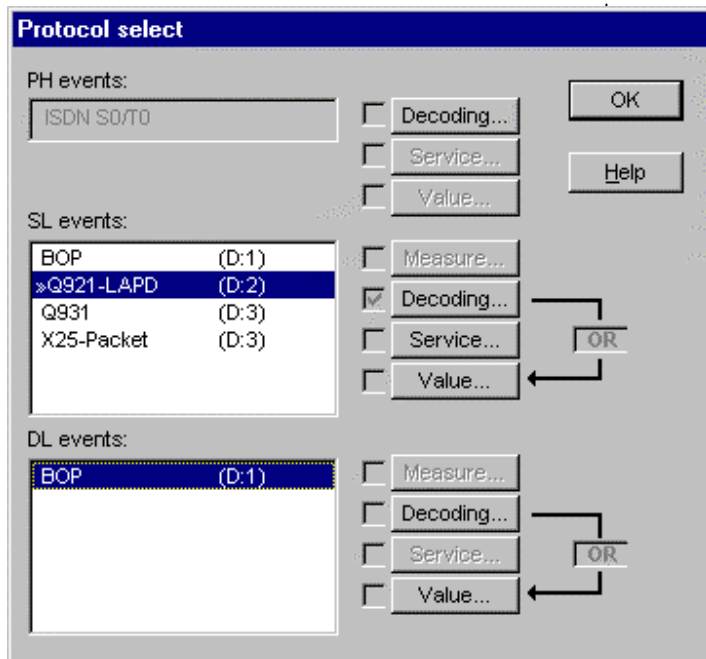
5. Click on **Edit**.



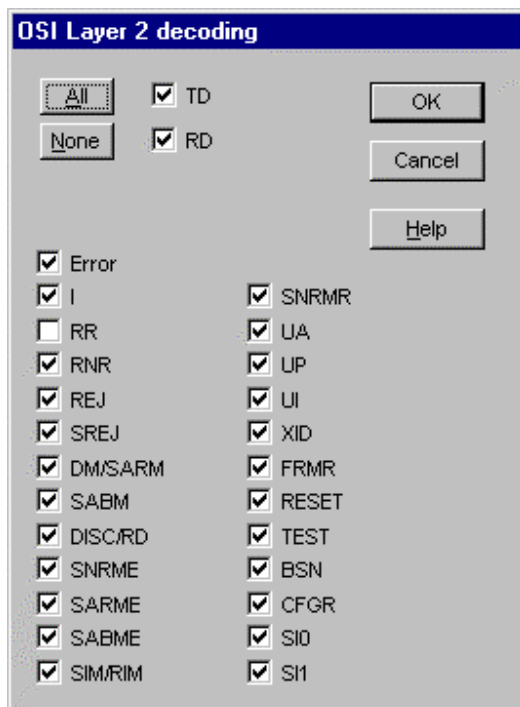
6. Click on **Events from** and then on **Edit (Protocol Events)**.



7. Click on **Q921-LAPD** (D: 2). Click on **Decoding**.



8. Click on **All**. De-select **RR** (click in 'RR' box).



9. Click **OK** until you return to the protocol filter editor screen. Then click on the **Diskette Icon** in the top left hand corner to save and close the window. The new filter will take effect immediately on the display.

Useful Tools

Translating Clarinet Statistics to MS Excel After running a profile

This feature is very useful for displaying and analysing test results in a commonly used file format that is easy to distribute.

1. Install **wac_excl.exe** which you will find in your Clatools directory (C:\Clarinet\Clatools).
2. Open **wac_excl.xls** (C:\Clarinet\Clatools), this will open MS Excel. Select **Enable Macros** and you will notice 3 new icons on the left hand side of your screen.
3. Click on the **Import** icon and specify your **.ace** and **.asf** files.
4. You will be asked whether you want to open the Excel file now? Click **OK**.
5. The Excel file will be generated automatically.


Translating Clarinet Statistics to MS Excel while running a Profile

1. Start/Programs/Clarinet 10.*/**Clarinet init**
3. Click on **Edit**.
3. Click on **Manager 1 Configuration**.
4. In the '**After Each Execution**' section click on **Process 1**.
5. In the file name section enter: **WAC_EXCL**.
6. In the parameters section enter: **-p**
7. Place a **tick** next to '**Needs a statistics file**' and '**Closed by Clarinet Manager**'.
8. **Save** changes and exit.
9. **Restart** your Clarinet Manager.
10. When you run a Clarinet profile an Excel statistics file will be automatically generated and given the same file name as your statistics file. You will find the Excel statistics file in your **Cladata** directory (C:\Clarinet\Cladata).

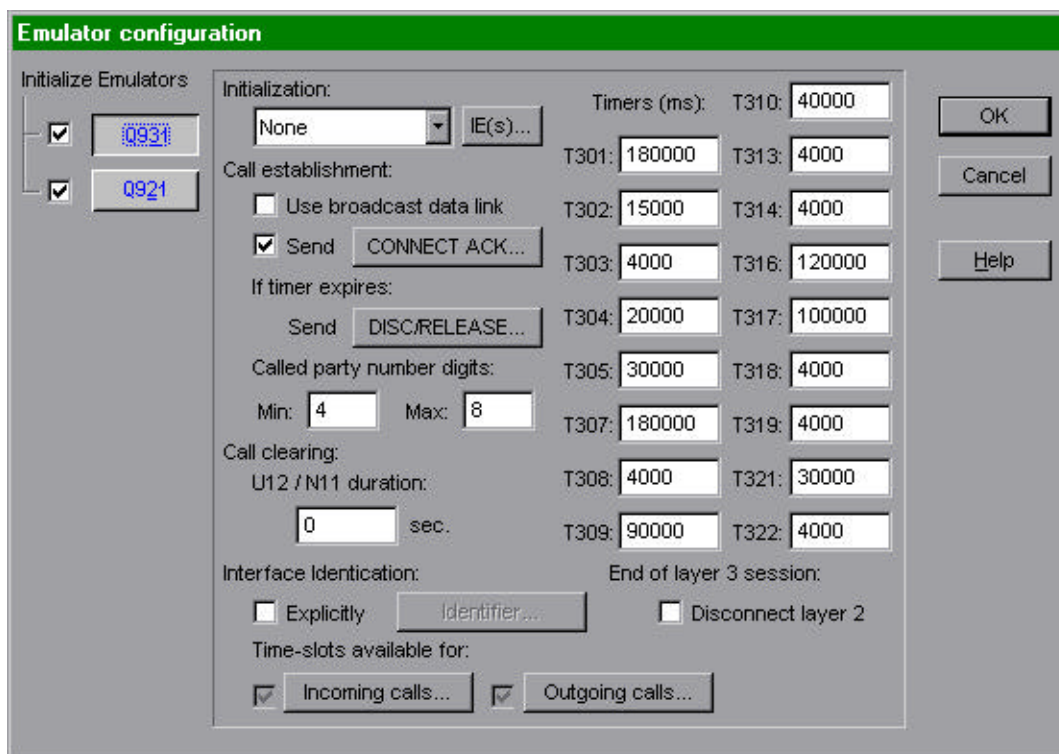
Examples

Example 1: Customising the Network behaviour to clear on user selected timer expiry with a particular cause.



Click on  to Open Profile.

1. Open Profile: - **Isdn_etsi_simu_net_s0**
2. From the Clarinet Profile Editor, click on **Emulator Config**. Click on **Q931**.



Typical Example: All Layer three timers are accessible so as an example we will send a call, receive an alerting message, then wait 2 seconds for the connect message, and if not received, clear down with clearing cause 41, Temporary Failure.

Configuration

4. T301 is set by default to 180,000 mS (180 seconds) so reduce this to 2,000mS (2 seconds) by deleting the current contents and overwriting with 2,000.
5. Click on the **Disc/Release panel**. The 'Information Element' panel will open and you will see that Cause is already inserted. Click on Coding to edit the cause.

6. It defaults to **102 Recovery on Timer Expiry** but you can click on the Down arrow and select any permitted clearing cause.
7. Select **041 Temporary Failure** then click **OK** until the Clarinet Profile Editor screen is displayed. Save your modifications by clicking on the **Diskette Icon**. Your customisation is complete.
8. Now run the Profile.

Example 2: Generating an outgoing call on receipt of an incoming call



1. Click on  to Open Profile.
2. Open Profile: - **Isdn_etsi_simu_net_s0**
3. From the Clarinet Profile Editor, click on **Generator**.
4. With cursor on Comm 1, click on **Edit**.

Starting delay: sec

Execution number:

Delay between exec.: sec

OK

Cancel

Help

Call establishment

User indication:

Send:

Send:

Establishment source:

Active state

Active source:

Data state duration: sec

Call clearing

Send:

5. Remove any digits from the Starting Delay field so that the communication will not automatically launch.
6. Click on **OK** until the Clarinet Profile Editor screen is displayed.
7. Click on **Responder**.
8. Click on **Connect** next to Active Source


Default data source edition

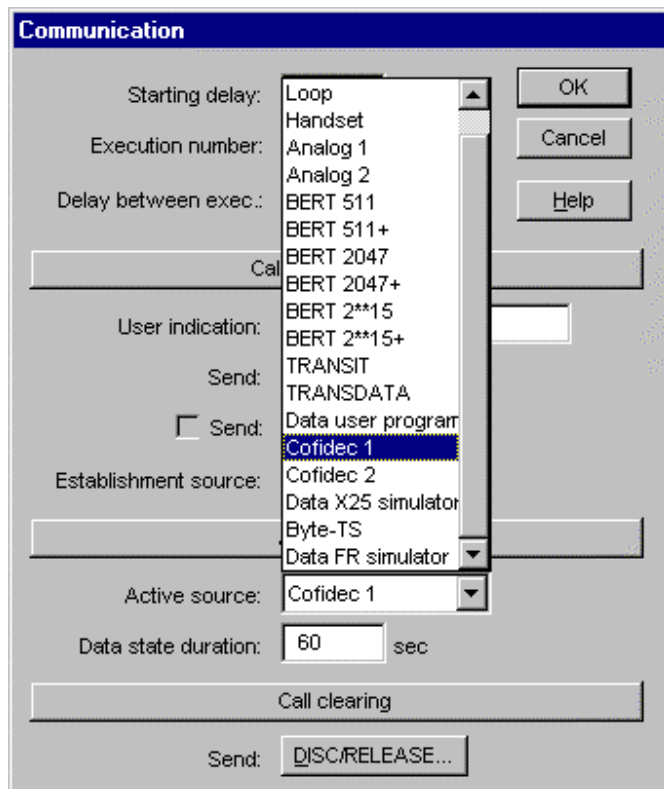
If IE present in incoming SETUP:	then, Connect data source:	
(/) Any IE	Loop	OK
(/) Any IE	None	Cancel
(/) Any IE	None	Help
(/) Any IE	None	<input checked="" type="checkbox"/> by IE
(/) Any IE	None	Coding...
(/) Any IE	None	Hexa...
(/) Any IE	None	
(/) Any IE	None	
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9. You could now enter particular Information Element contents which will define exactly which incoming call you wish to react to, but for the purpose of this exercise ignore these (any incoming call IE) and click on the **Down arrow next to Loop**.
10. Select '**Outgoing Call**' (last option).
11. Click on the **Down arrow** to select **Com 1 + B**. The '**+ B**' means include the B channel contents of your incoming call in to the B channel of the outgoing call. Click **OK** until the Clarinet Profile Editor screen is displayed and then save your modifications by clicking on the **Diskette Icon**.
12. Your customisation is now complete. Now run the Profile and you will see that a call is generated in response to an incoming call received by the Clarinet.

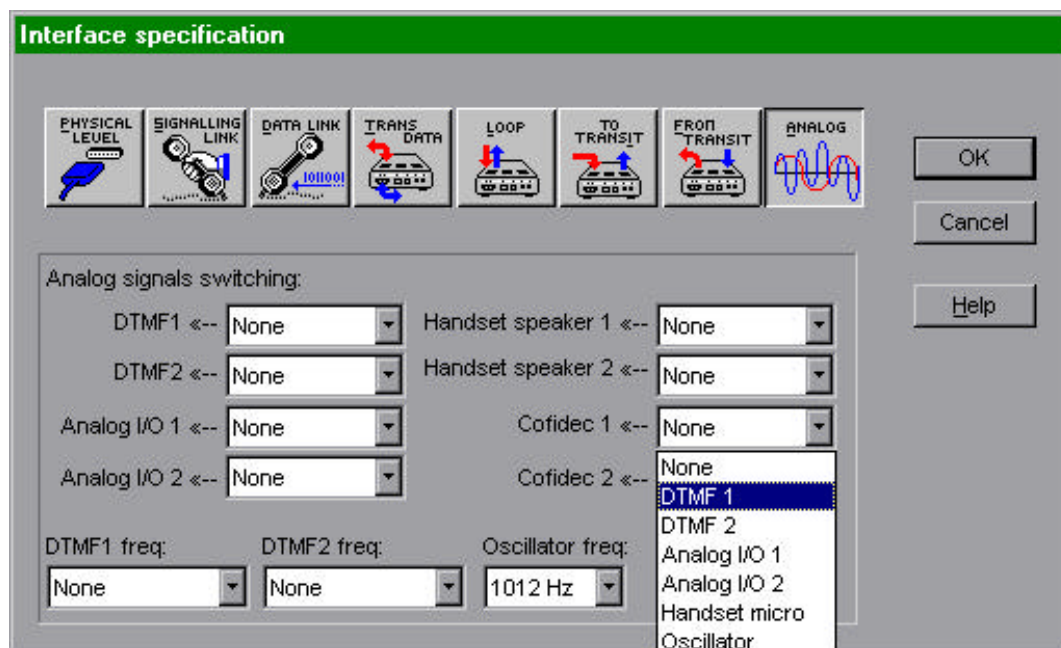
Example 4: Putting DTMF tones in to the B channel of a call generated by the Clarinet



1. Click on  to Open Profile.
2. Open Profile: - **Isdn_etsi_simu_net_s0**
3. Click on **Generator**.
4. With the cursor on Comm 1, click on **Edit**.
5. Click on the **Down arrow** next to **Loop (Active Source)**.



6. Select **Cofidec 1** (This connects the CODEC 1 to the outgoing B channel). Click on **OK** until the Clarinet Profile Editor screen is displayed.
7. Click on **Interface Specification**.



8. Click on **Analog**, then click on the **Down arrow** next to Cofidec 1 and select **DTMF 1**. This connects DTMF tone generator number 1 to the Codec allocated to your outgoing B channel.
9. To allocate a particular tone click on the **Down arrow** under DTMF 1 freq: and select any single or dual tone. This will be automatically inserted when the call connects.
10. Click **OK** until the Clarinet Profile Editor screen is displayed, and then click on the **Diskette Icon** to save.
11. Click on the **red horse** to run your Profile.
12. While the Profile is running the tone can be stopped or changed manually using the DTMF section from the Real Time Option screen (see page 12).

