

File version: 1.0.0.0

Installation of Sangoma A101/A102/A104/A108/A200 card on Windows 2000/XP/2003.

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**STEP 1 – Installing the card by following the instructions here**

<http://wiki.sangoma.com/windowsdriver>

**STEP 2 – Check the basic configuration and debugging here**

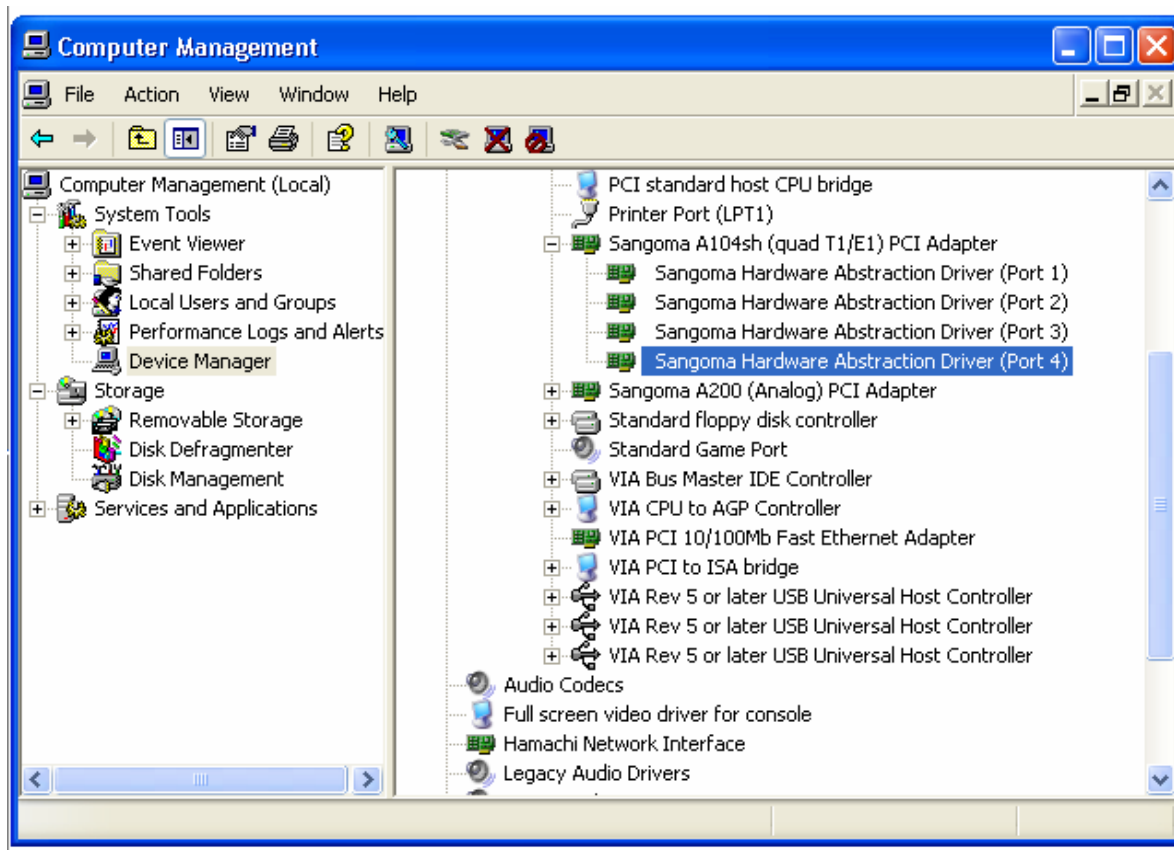
<http://wiki.sangoma.com/windowsoperation>

**STEP 3 – Check API/LibSangoma section here**

<http://wiki.sangoma.com/apilibsangoma>

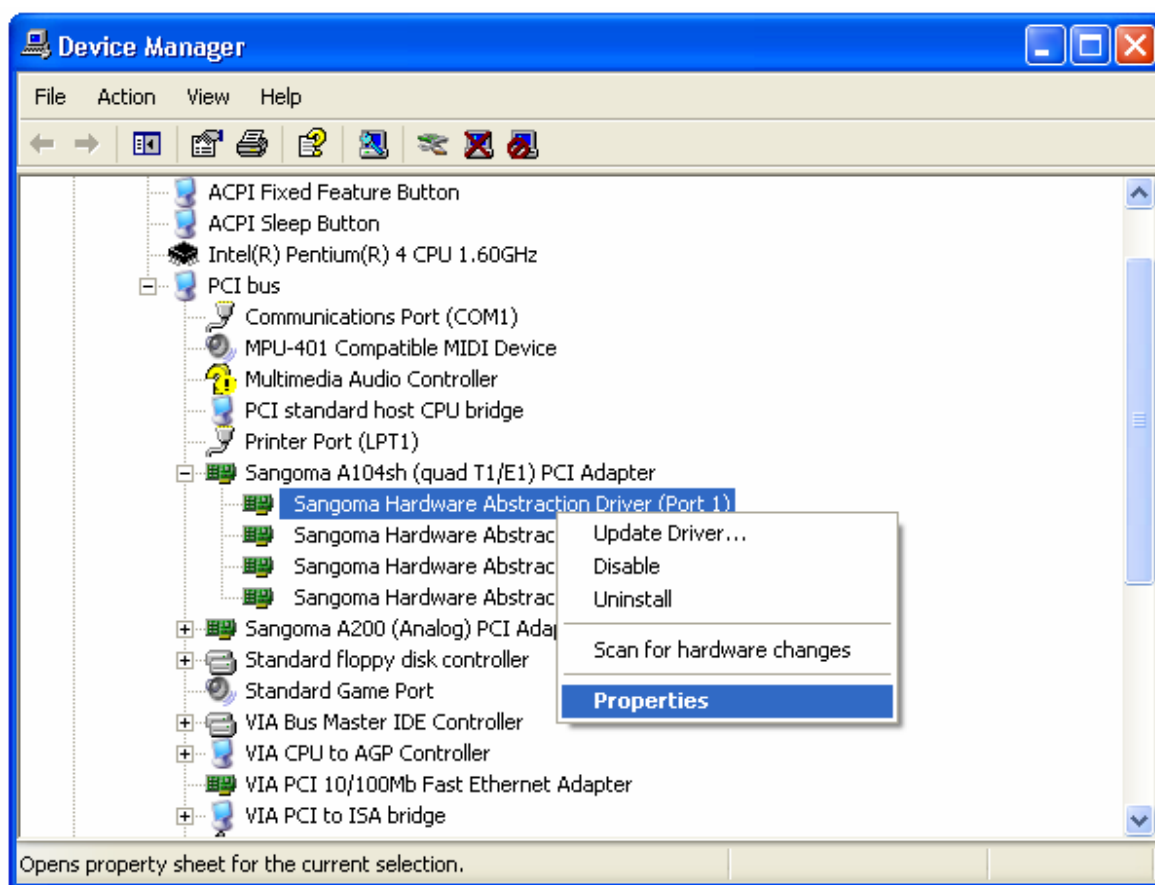
**STEP 4 – Configuring the card in LIBSANGOMA mode**

After the correct installation, you are supposed to see a similar picture as follows:

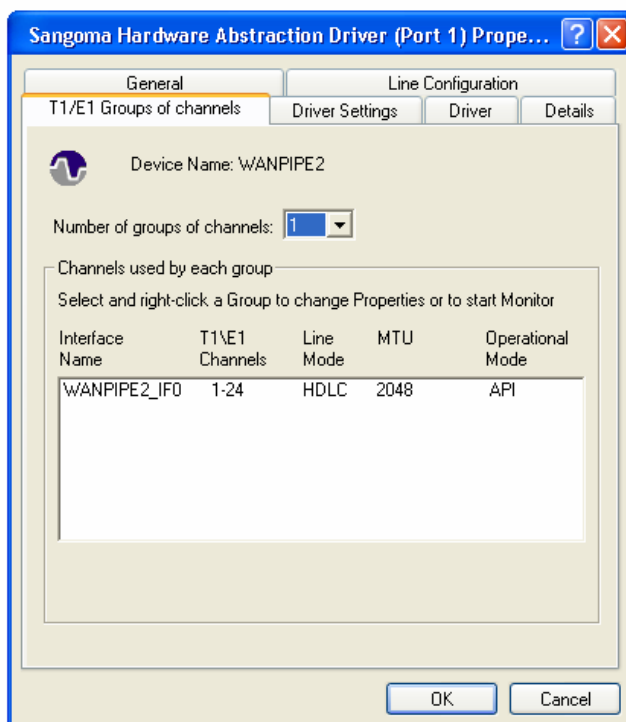


#### **Example 1 – A104d 2 ports back to back in Libsangoma**

1). Open the properties of "Sangoma Hardware Abstraction Driver (Port 1)" on A104d.



2). Switch to "T1/E1 Groups of Channels" option.



If you purchased channelized version of AFT card, you may set "Number of groups of channels" to something different than 1.

3). Switch to "Line Configuration" option: in this example, we will use T1 as default and you could change other settings according to your applications.

The screenshot shows the 'Sangoma Hardware Abstraction Driver (Port 1) Properties' dialog box with the 'Line Configuration' tab selected. The 'Device Name' is 'WANPIPE2'. Under 'Media Type', 'T1' is selected. The 'T1 Framing' is 'ESF', 'T1 Line Decoding' is 'B8ZS', and 'T1 LBO' is '0dB'. The 'E1 Framing' is 'CRC4', 'E1 Line Decoding' is 'AMI', and 'E1 Signalling' is 'CCS'. The 'Electrical Interface' is 'RS-232', 'Clock Source' is 'External', and 'Baud Rate' is empty. 'T1/E1 Clocking Mode' is 'Normal' and 'Clock Reference Port' is 'Not Used'. 'High Impedance' is 'Off'. 'OK' and 'Cancel' buttons are at the bottom.

4). Switch back to "T1/E1 Groups of Channels" option and change the number of channel groups to "24". You could change this into any number you like for your own application.

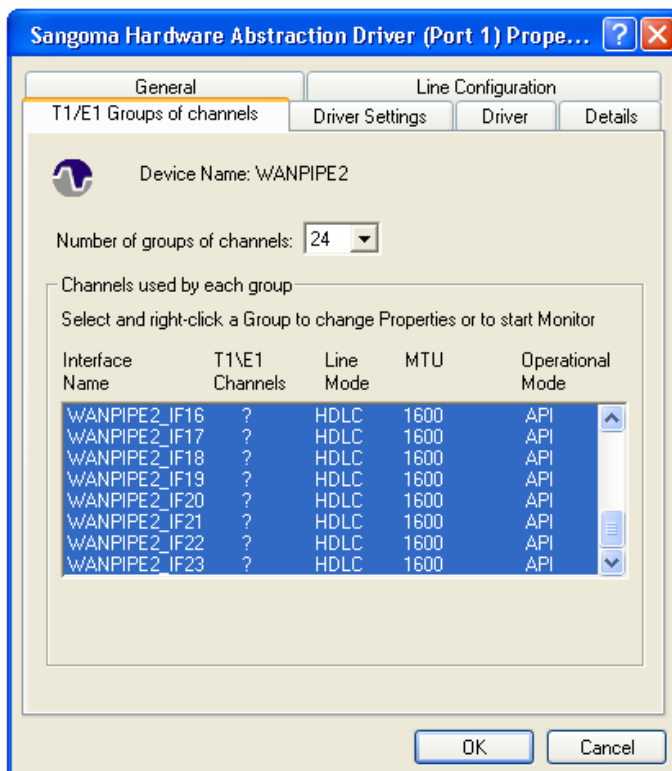
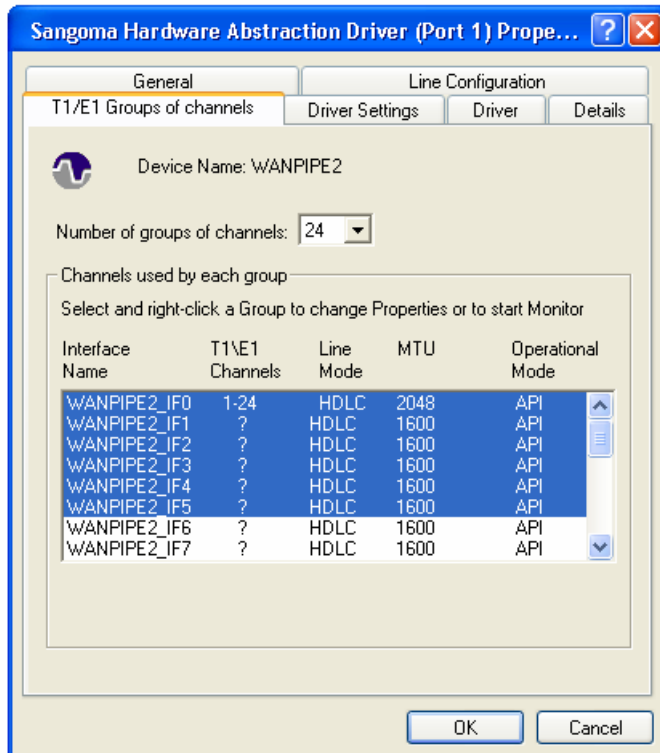
The screenshot shows the 'Sangoma Hardware Abstraction Driver (Port 1) Properties' dialog box with the 'T1/E1 Groups of Channels' tab selected. The 'Device Name' is 'WANPIPE2'. The 'Number of groups of channels' is set to '24'. Below, a table lists the channels used by each group. The table has columns: Interface Name, T1/E1 Channels, Line Mode, MTU, and Operational Mode. The data is as follows:

Interface Name	T1/E1 Channels	Line Mode	MTU	Operational Mode
WANPIPE2_IF0	1-24	HDLC	2048	API
WANPIPE2_IF1	?	HDLC	1600	API
WANPIPE2_IF2	?	HDLC	1600	API
WANPIPE2_IF3	?	HDLC	1600	API
WANPIPE2_IF4	?	HDLC	1600	API
WANPIPE2_IF5	?	HDLC	1600	API
WANPIPE2_IF6	?	HDLC	1600	API
WANPIPE2_IF7	?	HDLC	1600	API

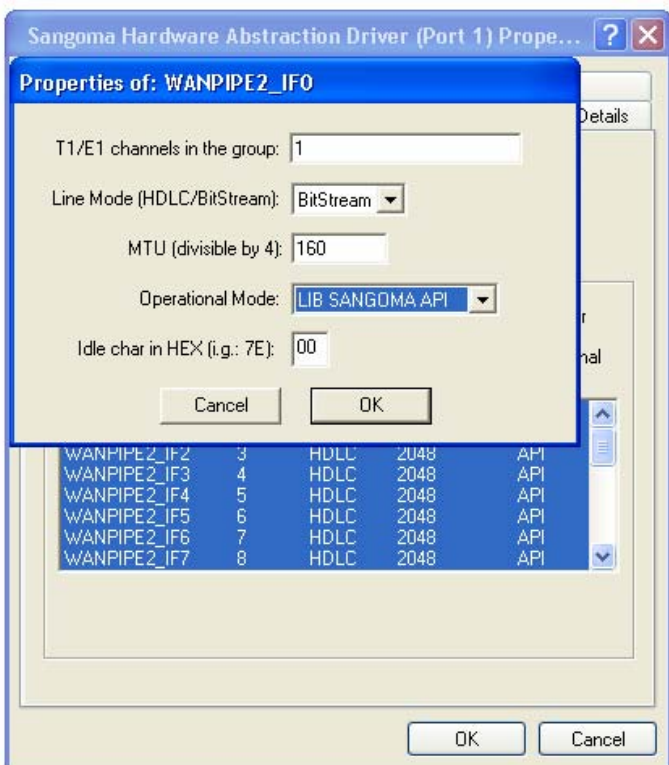
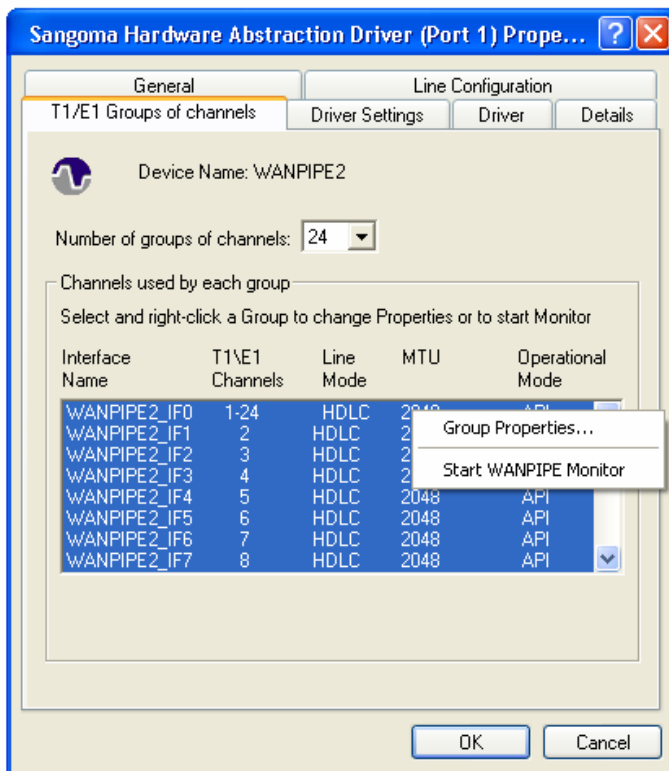
'OK' and 'Cancel' buttons are at the bottom.

5). Configuring each individual group is really painful. If all of them are running under the same setting, there is an easy way to configure them:

a. Press “control” key and select all 24 groups in this example

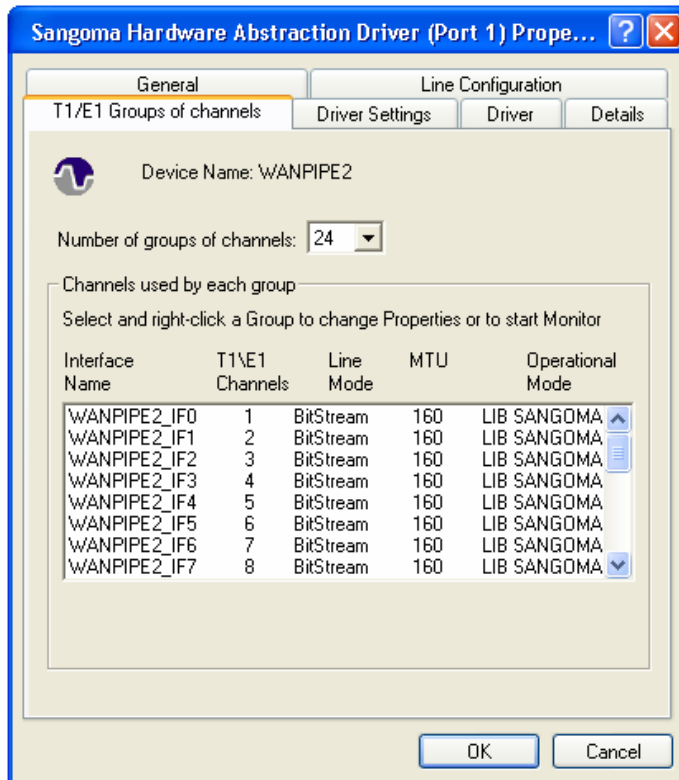


b. Go back to WANPIPE2\_IF0, select it and right click to go to “Group Properties” option

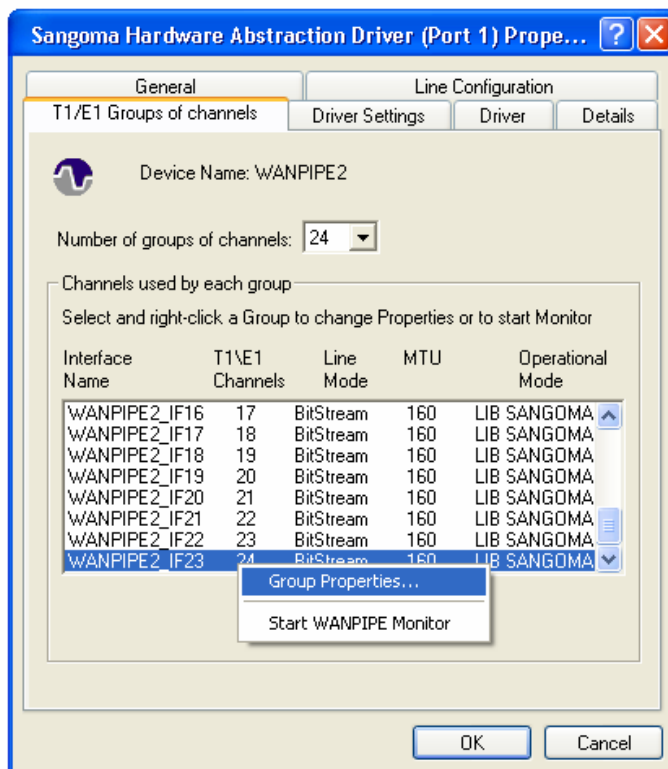


c. If you need BitStream or HDLC API, the Operational Mode would be set to API or Libsangoma. If you need Frame Relay, CHDLC (CiscoHDLC) or PPP router or API, the Operational Mode should be set to STACK. In this example, we will use "LIB SANGOMA API", which is a cross-platform API and works 99% the same way on both Windows and Linux. We also change MTU to 160 for data channels here.

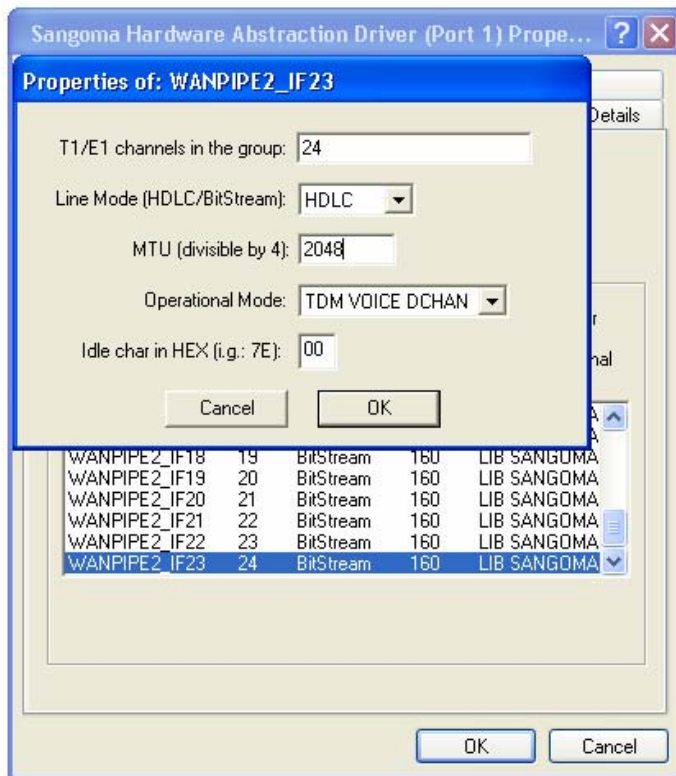
d. If you setup "T1/E1 channels in the group" as 1 in last step, you will find out all 24 groups will be configured under the same setting.



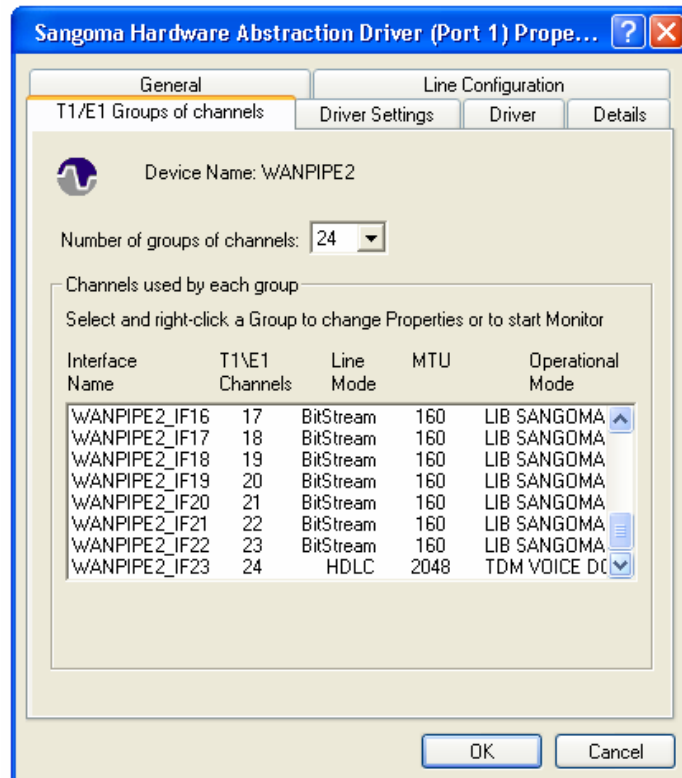
6). To configure channel 24 as D channel for your application, go to WANPIPE2\_IF23(number starts from zero), select it and right click to go to "Group Properties" option.



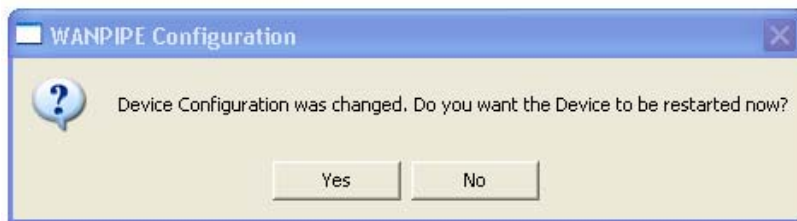
7). Change MTU to 2048 and operational mode to "TDM VOICE DCHAN"



8). After step 7, you are supposed to see a picture like this:



9). Restart the device after the configuration was changed.



## STEP 5 – Data transmission test on data channels (1-23)

1.) Open a new Command Window (cmd.exe), change the directory to <AFT\_ROOT>\voice\_api\_libsangoma\libsangoma\_sample\Release and run “lib\_sangoma\_sample.exe”. You should see the full manual for this command.

```

C:\WINDOWS\system32\cmd.exe

C:\AFT_beta_6_0_1_8\voice_api_libsangoma\libsangoma_sample\Release>lib_sangoma_sample.exe
ERROR: No Card name AND No Interface Name! At least one of them needed!

API lib_sangoma_sample.exe USAGE:

lib_sangoma_sample.exe <options> <extra options>

<options>:
-c <card name>          #card name
-i <ifname>             #interface name
-r                     #read enable
-w                     #write enable

example 1: lib_sangoma_sample.exe -c 1 -i 1 -r
in this example Wanpipe 1, Interface 1 will be used for reading data
example 2: lib_sangoma_sample.exe -c 1 -r
in this example Wanpipe 1 and 1-st free Interface found will be used for reading data

<extra options>
-txcnt <digit>          #number of tx packets <Dflt: 1>
-txsize <digit>         #tx packet size <Dflt: 10>
-txdelay <digit>        #delay in sec after each tx packet <Dflt: 0>
-txdata <digit>         #data to tx <1-255>

-dtmf_octasic           #Enable DTMF detection on Octasic chip
-dtmf_remora           #Enable DTMF detection on A200 (SLIC) chip
-remora_hook            #Enable On/Off hook events on A200
-set_codec_slinear      #Enable SLINEAR codec
-set_codec_none         #Disable codec
-rbs_events             #Enable RBS change detection

-rxcnt <digit>          #number of rx packets before exit
                        #this number overwrites the txcnt
                        #Thus, app will only exit after it
                        #receives the rxcnt number of packets.

-verbose               #Enable verbose mode

C:\AFT_beta_6_0_1_8\voice_api_libsangoma\libsangoma_sample\Release>

```

2). Enable the data transmission of one port under Libsangoma by running “libsangoma\_sample.exe -c 2 -i 1 -r -w”. If the link is connected, you should see the increase of “Receive Counter”.



```
C:\WINDOWS\system32\cmd.exe - lib_sangoma_sample.exe -c 2 -i 1 -r -w

C:\AFT_beta_6_0_1_8\voice_api_libsangoma\libsangoma_sample\Release>lib_sangoma_sample.exe -c 2 -i 1 -r -w
Enabling Poll Events:
POLL_EVENT_LINK_STATE
POLL_EVENT_RX_DATA
POLL_EVENT_TX_READY
POLL_EVENT_TIMEOUT
Using Card name: 2, Interface name: 1
TDM DTMF PTR = 004026C0
HANDLING SPAN 2 CHAN 1
TDM API CFG:
    hw_tdm_coding: 0
    usr_ntu_nru: 8
    usr_period: 10
    tdm_codec: 0
    power_level: 0
    rx_disable: 0
    tx_disable: 0
    usr_ntu_nru: 80
    idle flag: 0x00
    rx pkt 0    tx pkt 0
    rx err 0    tx err 0

Span/Chan Handler: RxEnable=Yes, TxEnable=Yes, TxCnt=1, TxLen=10
T
Disabling POLL_EVENT_TX_READY...
Receive Counter: 100, Data Length: 160
Receive Counter: 200, Data Length: 160
Receive Counter: 300, Data Length: 160
Receive Counter: 400, Data Length: 160
Receive Counter: 500, Data Length: 160
Receive Counter: 600, Data Length: 160
```

## STEP 6 – Data transmission test on control channel (24)

1). In this example, wanpipe2 is connected to wanpipe3.

Open a new Command Window (cmd.exe), change the directory to  
<AFT\_ROOT>\voice\_api\_libsangoma\libsangoma\_sample\Release

2). Enable the data transmission on D channel of wanpipe3 by running “libsangoma\_sample.exe -c 3 -i 24 -r -w -txcnt 100”. On the end, do the same thing – “libsangoma\_sample.exe -c 2 -i 24 -r -w ” and you should see the follow output.

```
C:\AFT_beta_6_0_1_8\voice_api_libsangoma\libsangoma_sample\Release>lib_sangoma_sample.exe -c 2 -i 24 -r -w

Enabling Poll Events:
POLL_EVENT_LINK_STATE
POLL_EVENT_RX_DATA
POLL_EVENT_TX_READY
POLL_EVENT_TIMEOUT
Using Card name: 2, Interface name: 24
TDM DTMF PTR = 004026C0
HANDLING SPAN 2 CHAN 24
TDM API CFG:
    hw_tdm_coding: 0
    usr_ntu_nru: 1500
    usr_period: 0
    tdm_codec: 0
    power_level: 0
    rx_disable: 0
    tx_disable: 0
    usr_ntu_nru: 1500
    idle flag: 0x00
    rx pkt 0    tx pkt 0
    rx err 0    tx err 0

Span/Chan Handler: RxEnable=Yes, TxEnable=Yes, TxCnt=1, TxLen=10
T
Disabling POLL_EVENT_TX_READY...
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
Receive Counter: 100, Data Length: 128
POLL_EVENT_TIMEOUT
POLL_EVENT_TIMEOUT
```