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6 PC CONSOLE

6.1 OVERVIEW

PC Console is a Windows™ based software application running on an IBM™ compatible PC connected to an IP network. PC Console enables an operator to control a DRB-25 configured with an IP Controller and to stream received and transmitted signals over the IP network using Voice Over IP (VOIP).

Together with a DRB-25 unit equipped with an IP-enabled controller card, the PC Console provides the following features:

- Transmit and receive audio data between a Windows PC and the DRB-25 Digital Basestation over an IP network using Voice Over IP (VOIP).
- Transmit and receive to/from multiple DRB-25 units simultaneously
- Select radio channel
- Monitor radio operation including:
 - current channel number and name
 - current operation mode (FM or Project25)
 - last received CxCSS, NAC and Talk Group ID
 - current TX Talk Group ID

PC Console is a licensed feature and requires that the appropriate license is installed on the IP Controller.

6.2 GETTING STARTED

6.2.1 System requirements

The recommended system requirements for operation of the PC Console application are given in Table 6-1.

Table 6-1 System Requirements

Component	Recommended
Computer	Intel Pentium at 500 MHz
Operating system	Windows 2000 or XP
RAM	128 Mb
Hard disc free space	10 Mb
Ethernet Interface	10Mbit/s or better
Audio Interface	With audio inputs and outputs
Display type	Super VGA
Display resolution	1024 x 768 pixels

6.2.2 *Network Requirements*

It is recommended that the DRB-25 and the PC with PC Console application are connected by an Ethernet LAN of at least 10 Mbit capacity.

6.2.3 *Installing the PC Console Software*

Run the PCC_Setup.exe installer program. You will be prompted for several questions, but the default settings should be adequate in most cases. The questions are:

Select Installation Directory: The default is Program Files\Westel Wireless\PC Console. By default, PC Console writes its log file to this directory, so that the installation folder should be writable by normal users. However, the log file location can be changed by setting the value of the PCC_LOG environment variable.

Select Start Menu Folder: Select where to place the program shortcuts in the Start Menu.

6.3 *CONFIGURATION*

6.3.1 *Network Configuration*

Before using the PC Console, the network settings on both the Windows PC and on the DRB-25 must be set correctly. For configuring the DRB-25 network parameters, see the DRB-25 user manual. For configuring Windows network settings, see the Windows documentation.

6.3.2 *PC Console configuration*

Before using the PC Console, a simple text configuration file must be edited. The location of configuration file is given by the PCC_CONF environment variable. This is set when PC Console is installed. By default, the configuration file is called pcc.conf and is located in the directory in which the application was installed.

6.3.2.1 *[transceiver] definitions*

Each separate transceiver that you wish to connect to must have a corresponding [transceiver] entry in the configuration file. These look something like this:

```
[transceiver]
name = dewey1
comment = Hill 18, slot 1
address = dewey.agency.gov:4999
slot = 1
user = fred
```

The fields have the following meanings:

name: An arbitrary string identifying this transceiver. Choose something informative.

comment: An arbitrary comment. This is optional.

address: This is the address of the DRB-25 unit which holds the transceiver. This can be in form of a hostname, as above, or as a dotted-decimal IP address, e.g. 192.168.0.1:4999. The “4999” is the port number and must be present, whatever the address is.

slot: Which slot the transceiver occupies, this can be 1 or 2. Slot 1 is on the left hand side of the DRB-25, slot 2 on the right.

user: the name of the [user] entry to be used with this [transceiver] entry. See Section 0. This field is optional.

6.3.2.2 *Selecting Audio Data ports*

Two optional fields can be used in the [transceiver] sections to set the UDP ports used to transfer audio data between the PC and the DRB-25. In most cases the default settings will be adequate, but these options provide flexibility in network configuration. The configuration file entries should look like:

```
tx_port = 8000
```

```
rx_port = 8002
```

The fields have the following meanings:

tx_port: The port that the DRB-25 will receive data on from the PC Console. This audio data is to be transmitted over the air by the DRB-25.

rx_port: The port that PC Console will receive data on. This audio data has been received by the DRB-25.

Default settings for these fields are used if omitted from the [transceiver] section: These start at 8000 for the first connection, incrementing by two for each subsequent connection.

6.3.2.3 *[channel_button] definitions*

Channel buttons are a user interface feature that allow changing the channel of the radio easily. Put a [channel_button] definition in the configuration file for each of the channels that will be frequently used. The definitions look like:

```
[channel_button]
```

```
label = Channel 0
```

```
channel = 0
```

The fields are:

label: A text string that will appear on the button in the PC Console user interface

channel: The radio channel to change to when the button is pressed.

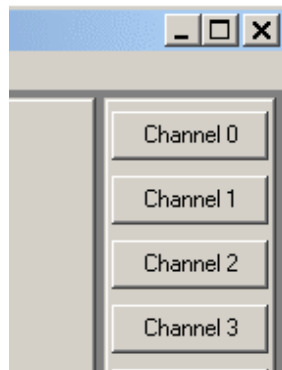


Figure 1 Channel buttons in the user interface

6.3.2.4 [user] definitions

User sections allow usernames and passwords to be stored in the configuration file and associated with particular transceivers. This avoids having to type a username and password every time a user connects to a transceiver. A [user] definition looks like:

```
user]
username = fred
password = monkey66
```

Note that storing a password in a file is much less secure than committing it to memory. The password field can be omitted from the [user] section for this reason. The [user] section can then be used to associate a username with a transceiver. The password will still have to be entered every time a user connects to a transceiver.

Also note that it is not necessary to use a username and password to connect to the DRB-25 as authentication is a configuration option. Configuring authentication and the requirement for a login password is explained in Chapter 3, Section 3.5.6.

6.3.2.5 Sample Configuration File

The following is an example of a configuration file:

```
# example configuration file for PC Console.

# [transceiver]
# name = black hill
# comment = black hill radio, slot 1
# address = 218.214.194.6:4999
# slot = 1
# tx_port = 8000
# rx_port = 8002

# [transceiver]
# name = red hill
# comment = red hill radio, slot 2
# address = 218.214.194.6:4999
# slot = 1
# tx_port = 8004
# rx_port = 8006

[transceiver]
name = VHF Demo
comment = Online Demo Unit, slot 1
address = 218.214.194.6:4999
slot = 1
tx_port = 8008
rx_port = 8012

[channel_button]
label = Channel 0
channel = 0

[channel_button]
label = Channel 1
channel = 1

[channel_button]
label = Channel 2
channel = 2

[transceiver]
name = UHF Demo
comment = Online Demo Unit, slot 2
address = 218.214.194.6:4999
slot = 2
tx_port = 8000
rx_port = 8002

[channel_button]
label = N Syd
channel = 6

[channel_button]
label = Chatswood
channel = 7

[channel_button]
label = N Syd
channel = 8

[channel_button]
label = N Syd
channel = 10

[global]

backend=C:\Program Files\Westel Wireless\PC Console\PCC_Backend.exe
install=C:\Program Files\Westel Wireless\PC Console
```

6.3.3 Log File location

The log file location is given by the environment variable PCC_LOG .This variable is set when PC Console is installed. By default, the log file is called pcc.log and is in the program installation folder. If it is acceptable, no changes need to be made. Otherwise, set the environment variable to the desired path.

6.3.4 Configuring the DRB-25 to work with PC Console

In general the DRB-25 channel table should be programmed in the normal way using the DRB-25 programmer channel table. However, there are a number of restrictions on the channels to be used.

6.3.4.1 Channel Settings

Each channel to be used with the PC Console should have its Control option set to “Line”. In addition, the channel Mode should be set to “Basestation”. Both of these are options in the DRB-25 Programmer Channel Settings dialog. If control is not set as Line, audio may not be received and transmitted correctly. If the radio changes to a channel not in line control mode, PC Console will show a warning message in the status bar and write it to the log file.

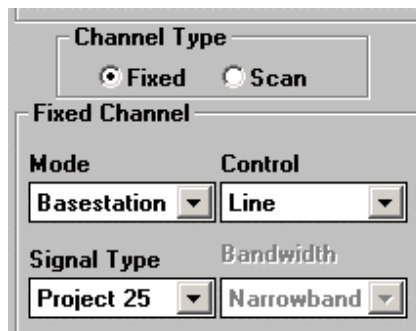


Figure 2 Correct settings in the DRB-25 Programmer Channel Settings dialog for use with PC Console

6.3.4.2 PC Console Daemon

The DRB-25 Controller card must run a specific application (service) in order to communicate with PC Console. The services which are running can be seen at Controller boot-up as shown in Chapter 3, Section 3.5.

6.3.4.3 Adding Usernames and Passwords

If the PC Console should use authentication when connecting to the DRB-25, then usernames and passwords must be added to the DRB-25. Currently this can only be done at the front panel serial port using a terminal emulation program. The standard UNIX shell utilities adduser and passwd are used to add users and to change passwords, respectively. Information on configuring users and passwords is shown in Chapter 3, Section 3.5.8.

6.4 CONNECTING TO THE DRB-25

6.4.1 Connecting to a single Transceiver

To connect to a transceiver, select the **Radio > Connect** menu Item.

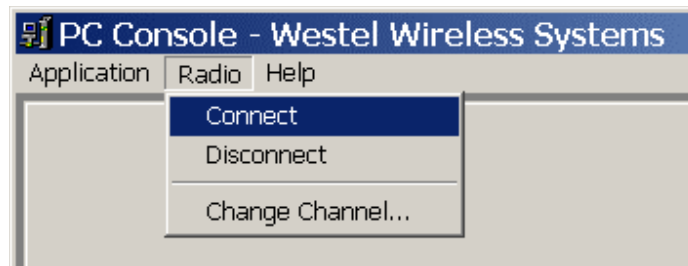


Figure 3 Select Radio > Connect to connect to a transceiver

This will bring up the Select Transceiver dialog box, from which a transceiver entry from the configuration file can be chosen. Select the desired transceiver by highlighting the name in the list box on the left of the dialog.

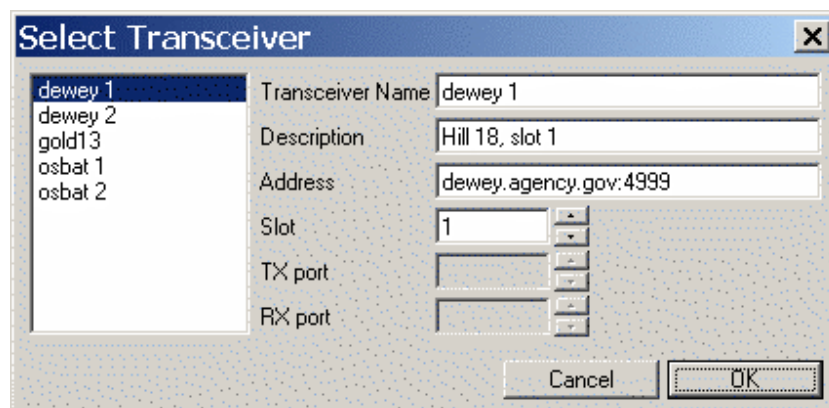
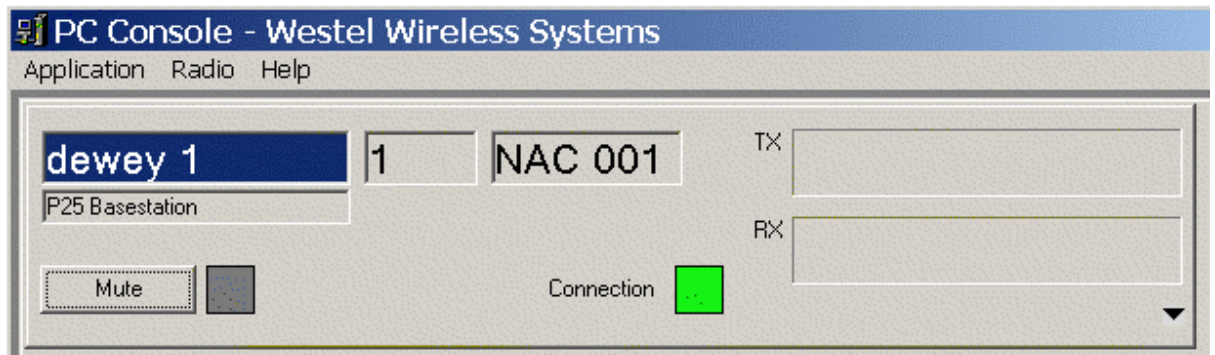


Figure 4 Select Transceiver dialog box

Click OK to attempt to connect to the transceiver. If successful, a new Transceiver Control Window will be displayed with information about the current channel. If unsuccessful, an error message will be displayed in the PC Console status bar and written to the log file.

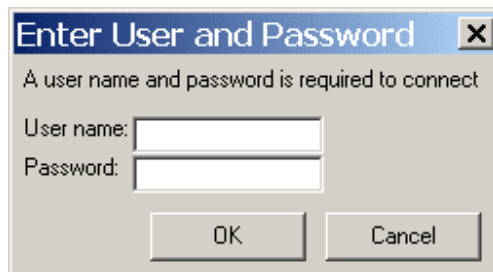
**Figure 5 Transceiver Control Window**

6.4.1.1 Logging In

If the DRB-25 is configured to require authentication, a username and password must be sent when connecting. This can be done in three ways:

1. Store the username and password in the configuration file;
2. Store the username only in the configuration file and enter the password when connecting;
3. Enter the username and password when connecting.

Use of the configuration file is discussed in Section 0. If the username and/or password must be entered when connecting, a dialog is shown:

**Figure 6 User and Password dialog**

6.4.1.2 Connecting to Multiple Transceivers

The procedure described above can be repeated to connect to multiple transceivers simultaneously.

6.4.2 Selecting Transceivers

6.4.2.1 Selecting a Transceiver

A transceiver is selected when the transceiver name field is blue with white text, and unselected when gray with black text. To select a transceiver, left-click on the transceiver name field. Any other transceivers will be deselected.

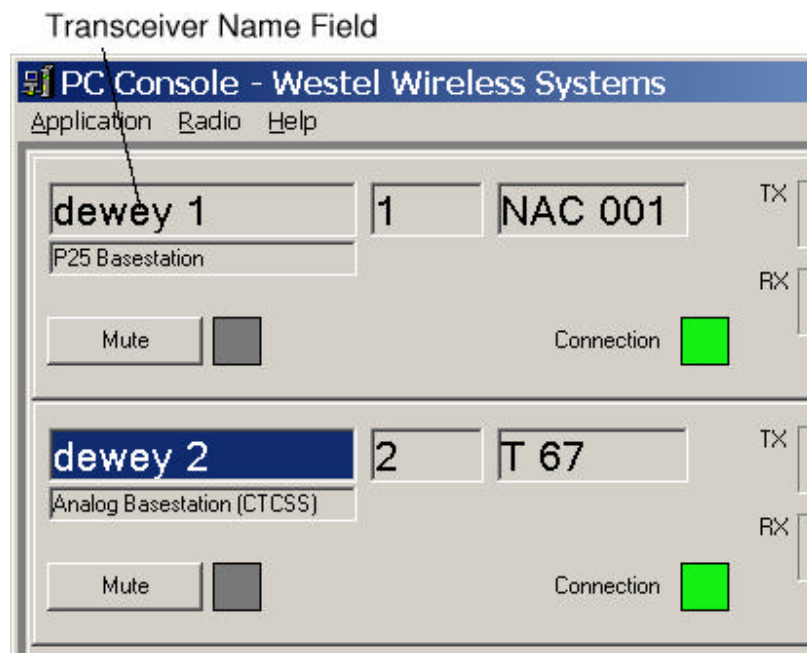


Figure 7 Selecting Transceivers: The lower Transceiver Control Window is selected, the upper one is not

6.4.2.2 *Selecting Multiple Transceivers*

More than one Transceiver can be selected simultaneously. This feature is used when transmitting with more than one Transceiver at once, for example. To select multiple transceivers, select the first with the left mouse button, then select the second in the same way while holding the SHIFT key. The Transceiver name field of both should then be highlighted (white text on blue background).

6.4.3 *Disconnecting from a Transceiver*

1. Select it by clicking in the Transceiver name field
2. Select the **Disconnect** menu item from the **Radio** Menu

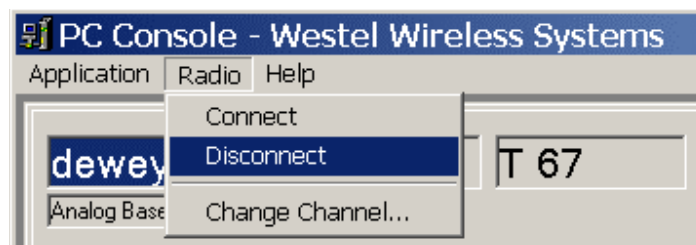


Figure 8 Select Radio->Disconnect to disconnect from a Transceiver

6.5 THE TRANSCEIVER CONTROL WINDOW

6.5.1 Main display fields

This section describes the main fields in the Transceiver Control Window.

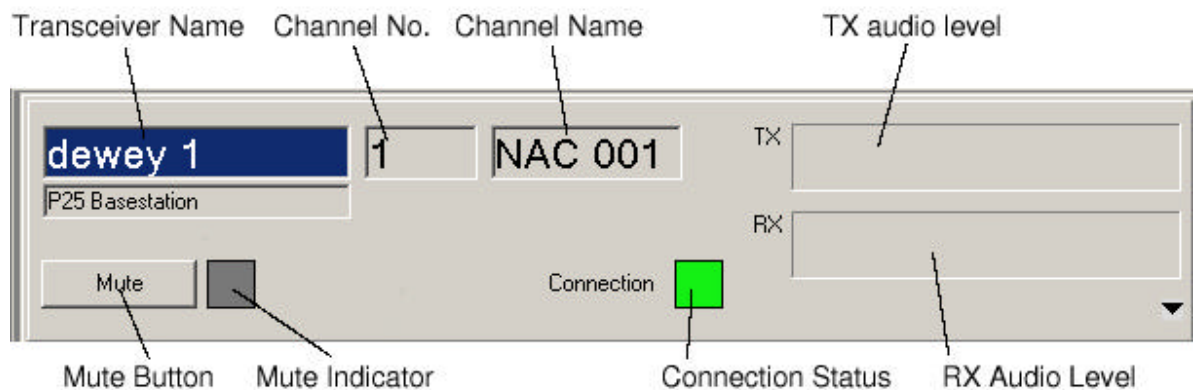


Figure 9 Transceiver Control Window fields

Transceiver Name: The name assigned to the Transceiver in the PC Console configuration file. See Section 0.

Channel No.: The number of the current channel in the Transceiver's channel table.

Channel Name: The name of the current channel in the Transceiver's channel table, set using the DRB-25 Programmer application.

Radio Mode: The current operating mode of the Transceiver. This indicates both Analog/Project25/Autosense and Basestation/Repeater. Settings. For Analog modes, it also indicates the squelch type.

Mute Button: This is a toggle-style button. When in the "pressed" position, audio received from this Transceiver is not sent to the soundcard. The audio level is still monitored on the RX audio level control.

Mute Indicator: This is read when RX audio is muted.

Connection Status: This displays the status of the TCP connection between the PC Console application and the DRB-25, based on heartbeat messages sent by the DRB-25. Normally it is green, but if the heartbeats do not arrive regularly it will change from green to orange and then to red.

TX audio level: The amplitude of audio being transmitted by the Transceiver.

RX audio level: The amplitude of audio being received by the Transceiver.

6.5.2 Viewing extended data

By pressing the small black triangle on the bottom right of the Transceiver Control Window, additional fields are displayed.

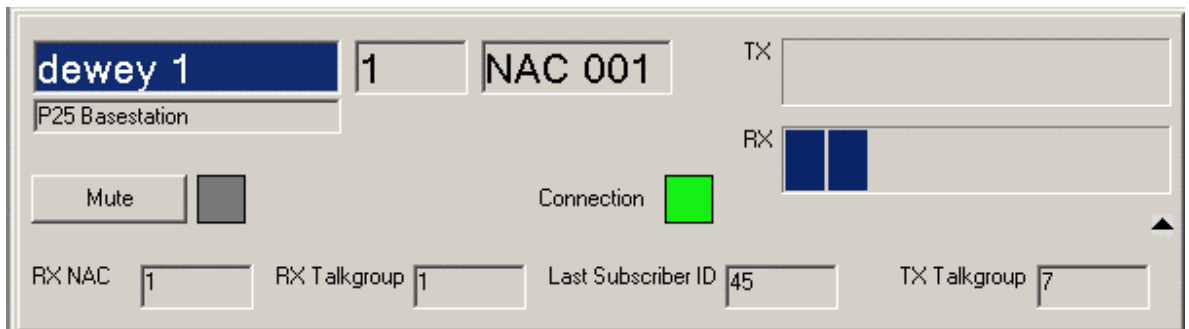


Figure 10 Extended fields of the Transceiver Control Window

RX NAC: When using a Project25 channel, this field shows the last NAC received. When using an Analog channel, the last CTCSS or CDCSS value will be shown instead.

RX Talk group: When using a Project 25 channel, this field shows the last NAC received. This field is not updated when using an Analog channel.

Last Subscriber ID: In Project 25 mode, this field shows the last Subscriber ID received. This field is not updated when using an Analog channel.

The three fields above are all updated dynamically whenever the DRB-25 receives a new signal.

TX Talk group: When using a Project 25 channel, this shows the Talk Group used by the transmitter. This field is not updated when using an Analog channel. Note that this is set using the DRB-25 Programmer, and as such is constant. The field will only change when changing channel.

6.6 CONTROLLING THE TRANSCEIVER

6.6.1 Changing the channel

There are two ways to change the channel.

6.6.1.1 Channel buttons

Pressing a channel button will cause a channel change of all Transceivers that are currently selected. See Section 0 for how to configure channel buttons.

6.6.1.2 Change Channel Dialog Box

Selecting **Change Channel...** from the **Radio** Menu will bring up the Change Channel Dialog Box. Enter a number and press OK to change the radio channel. This will change the channel on all Transceivers that are currently selected.

**Figure 11 Change Channel menu item****Figure 12 Change Channel dialog box**

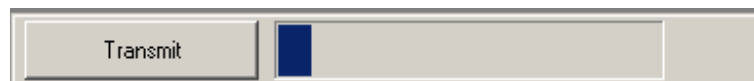
Note that in both cases, the channel change will only succeed if the channel has been previously programmed using the DRB-25 Programmer application.

6.6.2 *Receiving Audio*

Whenever squelch opens on the Transceiver, audio will be streamed across the IP network to the connected PC Console application. The received audio level will be indicated on the RX Audio Level indicator. The received audio will be automatically sent to the sound card for playback through speakers or headphones. The Mute button on each Transceiver Control Window can be used to listen to any combination of connected transceivers.

6.6.3 *Transmitting Audio*

When the Transmit Button is activated, audio will be streamed across the IP network to the DRB-25 and transmitted over the air. The Transmit Button can be activated by pressing and holding with the mouse, or by clicking on the Transmit Bar and pressing the space key. Audio will be streamed to all transceivers that are currently selected.

**Figure 13 The Transmit Bar**

The audio level meter on the Transmit Bar shows the audio level of the input to the PC Console application. When transmitting, the TX audio meter on selected Transceiver Control Windows will show the same level to indicate transmission.

6.7 *TROUBLESHOOTING*

The most helpful tool when troubleshooting PC Console is the log file which by default is written to the installation directory. PC Console logs all its actions to this file, as well as warnings and errors.

Things that can go wrong:

6.6.1 *Network connectivity*

Make sure there is basic IP network connectivity between the PC and the DRB-25. This can be done using the *ping* program.

6.6.2 *Firewalls*

If there is a firewall between the PC and the DRB-25, this may prevent connecting to the DRB-25 or sending/communicating audio data. Check with your system administrator and ensure that port 4999 is open to enable the transfer of control information and the audio ports chosen (8000 – 8xxx) to enable the transfer of audio.

6.6.3 *DRB-25 configuration*

Ensure that the channel table is set up correctly as described in Section 5.

6.6.4 *Audio I/O*

Ensure that the audio settings are correct on the PC. The output should not be muted, and the input should be set to "Microphone", not "Line" if using a headset microphone.

6.8 *LICENSES*

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