

# **MicroComm DXI**

## **DXI Configuration Example**

November 2009



## Table of Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>PLANNING A PROJECT .....</b>  | <b>1</b>  |
| <b>2</b> | <b>CREATING THE CONFIGURATION FILES.....</b>                               | <b>6</b>  |
| 2.1      | EDITING SYSTEM HARDWARE CONFIGURATION .....                                | 6         |
| 2.1.1    | <i>Editing Exchange information.....</i>                                   | 8         |
| 2.1.2    | <i>Editing Card information .....</i>                                      | 11        |
| 2.1.3    | <i>Editing Master information .....</i>                                    | 17        |
| 2.1.4    | <i>Editing Station information .....</i>                                   | 19        |
| 2.1.5    | <i>Editing Digital Audio Trunk information .....</i>                       | 22        |
| 2.1.6    | <i>Saving the hardware configuration file.....</i>                         | 22        |
| 2.2      | EDITING SYSTEM SOFTWARE CONFIGURATION.....                                 | 23        |
| 2.2.1    | <i>Editing Master information .....</i>                                    | 25        |
| 2.2.2    | <i>Editing Station information .....</i>                                   | 30        |
| 2.2.3    | <i>Editing Page Zone information .....</i>                                 | 33        |
| 2.2.4    | <i>Editing Globals information.....</i>                                    | 34        |
| 2.2.5    | <i>Saving the software configuration file.....</i>                         | 35        |
| <b>3</b> | <b>SETTING UP THE DXI SYSTEM.....</b>                                      | <b>35</b> |
| <b>4</b> | <b>INSTALL HEAD END EQUIPMENT USING THE “SWAP CARD” FUNCTION.....</b>      | <b>36</b> |
| <b>5</b> | <b>APPENDIX 1: ASSIGNING ETHERNET “TCP/IP” ADDRESSES TO COMPUTERS.....</b> | <b>39</b> |



# 1 Planning a Project

Before you can create the configuration files for a DXI project, you need to plan out the system. You will need to assign ports to each intercom station and master station, and also associate each device (intercom station, master station, etc.) with a unique identifying number which must be **numeric only** (no alphabetic characters, even if it is just an A or B). You should also determine which master or masters each intercom calls into.

This can be planned with a spreadsheet. Harding has example spreadsheets that can be used for this purpose.

The training system outlined has the following equipment:

Field devices include:

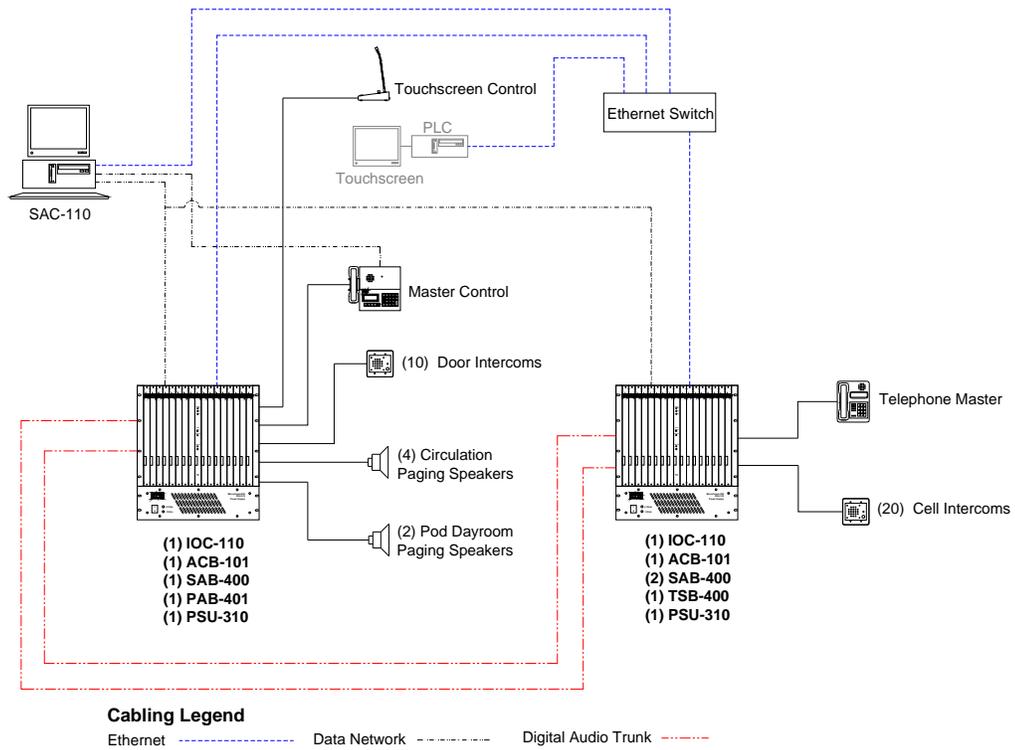
- 10 circulation intercoms, connected to the central equipment room head end equipment.
- 20 cell intercoms, connected to the pod equipment room head end equipment (10 for pod A, 10 for pod B)
- 1 stand-alone master station in central control, used as a backup in case of computer problems, and also during busy shifts. This will receive all circulation calls.
- 1 touchscreen master station in central control, staffed all the time. This will receive all circulation calls.
- 1 telephone master station in the housing pod, overlooking pod A and pod B, staffed daytime hours only and with calls forwarding to central control (stand-alone and touchscreen) when it is not staffed or if a call is not answered within 60 seconds. This receives pod A and pod B cell intercom calls only.

Head end equipment includes:

- One SAC computer which has the following part number and installed cards  
 SAC-110-155-310  
 SAC-110-1 = rack mount SAC computer  
     55 = 2 Lonworks control cards (“Backplane” card for card cages, “Remote A” card for masters)  
    -3 = 1 Ethernet card (for host PLC/touchscreen control)  
     1 = Modem card (standard)  
     0 = No additional Ethernet cards
- One rack consisting of a card cage and related equipment in the central equipment room, which is used for circulation intercoms and central control masters  
 1 IOC-110 card cage  
 1 PSU-310 power supply  
 1 ACB-101 audio control board  
 1 SAB-400 for intercoms and masters  
 1 PAB-401 for paging speakers
- One rack consisting of a card cage and related equipment in the pod equipment room, which is used for pod intercoms and a pod master  
 1 IOC-110 card cage  
 1 PSU-310 power supply  
 1 ACB-101 audio control board  
 2 SAB-400 cards for intercoms  
 1 TSB-400 for telephone master for pod master

## DXI Configuration Example

The layout of this training system is shown below:



For this training configuration, the following spreadsheets were created:

Head end equipment:

| CARD CAGE ID: |             | 100                    |           |            |
|---------------|-------------|------------------------|-----------|------------|
| LOCATION:     |             | Central Equipment Room |           |            |
| SLOT NO.      | CARD ID NO. | CARD NAME              | CARD TYPE | OPTIONS    |
| 1             | 101         | ACB 101                | ACB-100   |            |
| 2             | 102         |                        | BSK-101   | Blank slot |
| 3             | 103         | SAB 103                | SAB-400   |            |
| 4             | 104         |                        | BSK-105   | Blank slot |
| 5             | 105         |                        |           |            |
| 6             | 106         |                        |           |            |
| 7             | 107         |                        |           |            |
| 8             | 108         |                        | BSK-105   | Blank slot |
| 9             | 109         |                        |           |            |
| 10            | 110         |                        |           |            |
| 11            | 111         |                        |           |            |
| 12            | 112         |                        |           |            |
| 13            | 113         |                        | BSK-103   | Blank slot |
| 14            | 114         |                        |           |            |
| 15            | 115         |                        |           |            |
| 16            | 116         |                        |           |            |
| 17            | 117         | PAB 117                | PAB-401   |            |

DXI Configuration Example

| CARD CAGE ID: 200            |             |           |           |            |
|------------------------------|-------------|-----------|-----------|------------|
| LOCATION: Pod Equipment Room |             |           |           |            |
| SLOT NO.                     | CARD ID NO. | CARD NAME | CARD TYPE | OPTIONS    |
| 1                            | 201         | ACB 201   | ACB-100   |            |
| 2                            | 202         |           | BSK-101   | Blank slot |
| 3                            | 203         | SAB 203   | SAB-400   |            |
| 4                            | 204         | SAB 204   | SAB-400   |            |
| 5                            | 205         | TSB 205   | TSB-400   |            |
| 6                            | 206         |           | BSK-105   | Blank slot |
| 7                            | 207         |           |           |            |
| 8                            | 208         |           |           |            |
| 9                            | 209         |           |           |            |
| 10                           | 210         |           | BSK-105   | Blank slot |
| 11                           | 211         |           |           |            |
| 12                           | 212         |           |           |            |
| 13                           | 213         |           |           |            |
| 14                           | 214         |           |           |            |
| 15                           | 215         |           |           |            |
| 16                           | 216         |           | BSK-101   | Blank slot |
| 17                           | 217         |           | BSK-101   | Blank slot |

Master stations:

| MASTER STATIONS |                     |         |            |           |                   |                |
|-----------------|---------------------|---------|------------|-----------|-------------------|----------------|
| MASTER ID       | MASTER NAME         | CARD ID | CHANNEL ID | SECONDARY | STATION CALL LIST | ZONE CALL LIST |
| 1               | Master Control      | 103     | 16/Mic     | 0         | All               | 1-4,11-14      |
| 2               | Touchscreen Control | 103     | 14/15      | 0         | All               | 1-4,11-14      |
| 3               | Telephone Master    | 205     | 1          | 10        | 201-210,301-310   | 3-4            |
|                 |                     |         |            |           |                   |                |

Master groups:

| MASTER GROUPS |            |                  |           |
|---------------|------------|------------------|-----------|
| GROUP ID      | GROUP NAME | MASTERS IN GROUP | SECONDARY |
| 10            | Central    | 1-2              | 0         |
|               |            |                  |           |

DXI Configuration Example

Intercom stations:

| SAB ID:     |                | 103                       |        |          |
|-------------|----------------|---------------------------|--------|----------|
| LOCATION:   |                | Central Equipment Room    |        |          |
| CHANNEL NO. | STATION ID NO. | STATION NAME              | MASTER | LOCATION |
| 1           | 101            | Door IC101                | 10     |          |
| 2           | 102            | Door IC102                | 10     |          |
| 3           | 103            | Door IC103                | 10     |          |
| 4           | 104            | Door IC104                | 10     |          |
| 5           | 105            | Door IC105                | 10     |          |
| 6           | 106            | Door IC106                | 10     |          |
| 7           | 107            | Door IC107                | 10     |          |
| 8           | 108            | Door IC108                | 10     |          |
| 9           | 109            | Door IC109                | 10     |          |
| 10          | 110            | Door IC110                | 10     |          |
| 11          |                |                           |        |          |
| 12          |                |                           |        |          |
| 13          |                |                           |        |          |
| 14          | Master 2 (Spk) | Touchscreen Control (Spk) | N/A    |          |
| 15          | Master 2 (Mic) | Touchscreen Control (Mic) | N/A    |          |
| 16          | Master 1 (Spk) | Master Control (Spk)      | N/A    |          |
| Master Mic  | Master 1 (Mic) | Master Control (Mic)      | N/A    |          |

| SAB ID:     |                | 203                |        |          |
|-------------|----------------|--------------------|--------|----------|
| LOCATION:   |                | Pod Equipment Room |        |          |
| CHANNEL NO. | STATION ID NO. | STATION NAME       | MASTER | LOCATION |
| 1           | 201            | Cell A201          | 3      |          |
| 2           | 202            | Cell A202          | 3      |          |
| 3           | 203            | Cell A203          | 3      |          |
| 4           | 204            | Cell A204          | 3      |          |
| 5           | 205            | Cell A205          | 3      |          |
| 6           | 206            | Cell A206          | 3      |          |
| 7           | 207            | Cell A207          | 3      |          |
| 8           | 208            | Cell A208          | 3      |          |
| 9           | 209            | Cell A209          | 3      |          |
| 10          | 210            | Cell A210          | 3      |          |
| 11          | 301            | Cell B301          | 3      |          |
| 12          | 302            | Cell B302          | 3      |          |
| 13          | 303            | Cell B303          | 3      |          |
| 14          | 304            | Cell B304          | 3      |          |
| 15          | 305            | Cell B305          | 3      |          |
| 16          | 306            | Cell B306          | 3      |          |
| Master Mic  |                |                    |        |          |

DXI Configuration Example

| SAB ID:     |                | 204                |        |          |
|-------------|----------------|--------------------|--------|----------|
| LOCATION:   |                | Pod Equipment Room |        |          |
| CHANNEL NO. | STATION ID NO. | STATION NAME       | MASTER | LOCATION |
| 1           | 307            | Cell B307          | 3      |          |
| 2           | 308            | Cell B308          | 3      |          |
| 3           | 309            | Cell B309          | 3      |          |
| 4           | 310            | Cell B310          | 3      |          |
| 5           |                |                    |        |          |
| 6           |                |                    |        |          |
| 7           |                |                    |        |          |
| 8           |                |                    |        |          |
| 9           |                |                    |        |          |
| 10          |                |                    |        |          |
| 11          |                |                    |        |          |
| 12          |                |                    |        |          |
| 13          |                |                    |        |          |
| 14          |                |                    |        |          |
| 15          |                |                    |        |          |
| 16          |                |                    |        |          |
| Master Mic  |                |                    |        |          |

PAB/TAB stations:

| PAB ID:     |                | 117                    |               |              |          |
|-------------|----------------|------------------------|---------------|--------------|----------|
| LOCATION:   |                | Central Equipment Room |               |              |          |
| CHANNEL NO. | STATION ID NO. | STATION NAME           | MASTER (OPT.) | BRIDGED WITH | LOCATION |
| 1           | 10001          | Circulation 1          | 10            |              |          |
| 2           | 10002          | Circulation 2          | 10            |              |          |
| 3           | 10003          | Circulation 3          | 10            |              |          |
| 4           | 10004          | Circulation 4          | 10            |              |          |
| 5           | 20001          | Pod A Dayroom          | 3             | 5,6          |          |
| 6           |                |                        |               |              |          |
| 7           | 30001          | Pod B Dayroom          | 3             | 7,8          |          |
| 8           |                |                        |               |              |          |

Page zones:

| ZONES   |                 |                         |
|---------|-----------------|-------------------------|
| ZONE ID | ZONE NAME       | STATIONS IN ZONE        |
| 1       | All Page        | 10001-10004,20001,30001 |
| 2       | All Circulation | 10001-10004             |
| 3       | Pod A           | 20001                   |
| 4       | Pod B           | 30001                   |
| 11      | Circulation 1   | 10001                   |
| 12      | Circulation 2   | 10002                   |
| 13      | Circulation 3   | 10003                   |
| 14      | Circulation 4   | 10004                   |

## 2 Creating the Configuration Files

The DXI SAC computer is shipped with configuration files that are used for factory testing. These files define a small test system. This system has:

One computer on Exchange 1

Card Cage 1 has

ACB card 101

SAB card 103

Master 1 is on card 103.16

Master 1 has a keypad/display which is card 1

Station 1 is on card 103.1

Card Cage 2 has

ACB card 201

SAB card 203

Master 2 is on card 203.16

Master 2 has a keypad/display which is card 2

Station 2 is on card 203.1

We will adapt these configuration files for the purposes of this example.

First you will need to come up with a project name for your configuration files. Two configuration files will be created, a “hardware” configuration file and a “software” configuration file. It is recommended that the hardware file name start with “hw\_” and the software file name start with “sw\_”. To fit the files on a DOS formatted floppy for archival, it is recommended that the file name be no longer than 8 characters. Since three characters are already used with “hw\_” or “sw\_” that leaves 5 characters for your project name.

In this example, the project name will be “exam1”, so the hardware file name will be “hw\_exam1” and the software file name will be “sw\_exam1”.

You can now use the SAC computer to start editing your configuration files.

### 2.1 Editing system hardware configuration

The first step of creating the configuration is to add all the head end equipment and devices to the system. First of all, determine the system layout and the equipment required as above.

This first pass will add the hardware only. This will be done from the “Maintenance” set of menus, under “Modify Hardware”. A second pass through the configuration will fill out naming, call routing, and more detailed information. This will be done from the “Administration” set of menus, under “Modify Software”.

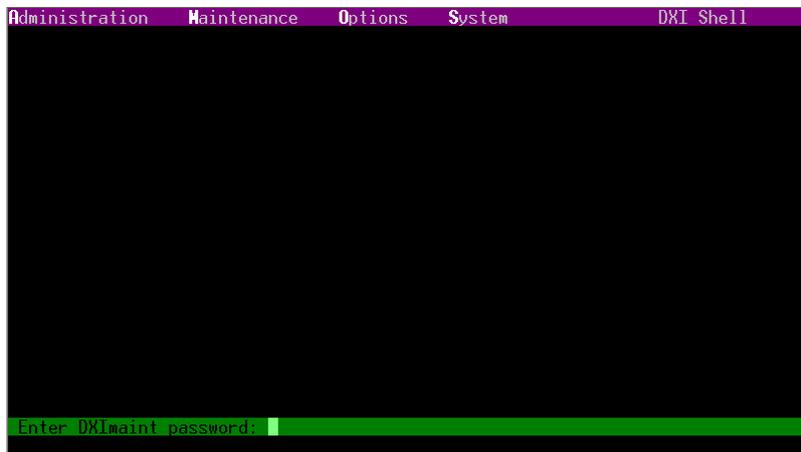
On the first pass, you will need to set up the equipment in the system.

On the SAC computer, the set of menus you are in is shown in the top right of the screen. The main menus are the “DXI Shell” menus. You will go to the Maintenance set of menus (“DXI Maint”) to set up the first pass.

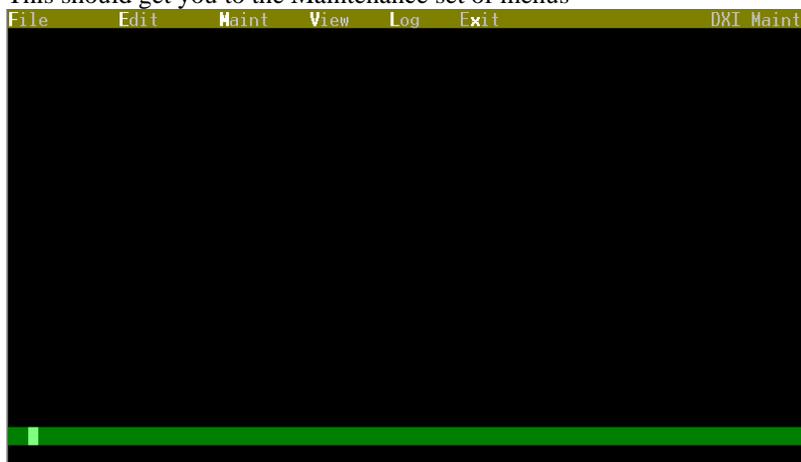
On all DXI menus, the highlighted (brighter) character in each menu item is the key to press to select that item.

To go to the maintenance set of menus, press the “m” key. The computer will prompt for a password. The default password is “maint”, so type “maint” and press the “Enter” key.

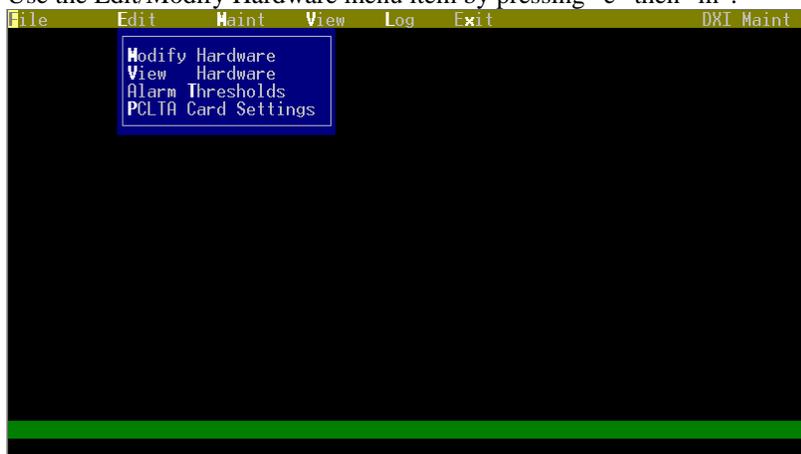
## DXI Configuration Example



This should get you to the Maintenance set of menus



Use the Edit/Modify Hardware menu item by pressing "e" then "m".



This will bring up a screen asking what database you would like to modify.

```
Database to modify? Exit          ( / to select)
```

In the “Database to modify” screens, generally you would modify devices in the order suggested – press the “Right arrow” key to go to the next type of device, hit “Enter” to edit and add these types of devices, then go back to the “Database to modify” screen, press the “Right arrow” key to select the next type of device, and repeat until all types of devices used are defined. Then you can use the “Right arrow” key to select “Exit” then hit “Enter” to exit to the maintenance set of menus.

### 2.1.1 Editing Exchange information

To start with, use the “Right arrow” key to select “Exchange” then press the “Enter” key.

The exchange screen defines the computers in the exchange and their Lonworks card information.

```

/ Enter: Next field.          : Previous field.          Home: Next page.
/ : Select.                  PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete F10: Add F1: Help.
                               Page 1 of 2
Exchange ID:                  1
Name (English):              exchange 1
Name (French):                ?
Name (Spanish):              ?
QNX ID (PC A):                2
QNX ID (PC B):                0
PC A PCLTA 1 Side A:
PC A PCLTA 1 Side B:
PC A PCLTA 2 Side A:
PC A PCLTA 2 Side B:
PC B PCLTA 1 Side A:
PC B PCLTA 1 Side B:
PC B PCLTA 2 Side A:
PC B PCLTA 2 Side B:

```

Each screen in the DXI editors has a set of help items on the top (note that these screen shots do not have some of the help text on them due to how they were captured).

The “Up arrow” and “Down arrow” keys will select which parameter to change, and typing in a value in that parameter will change it.

Some parameters can be changed with the “Left arrow” and “Right arrow” keys when the parameter is a limited set of options rather than a number or text string.

Pressing “Page up” or “Page down” go to the previous or next device of this type (in this case since we are in Exchange, it will go to the previous or next exchange).

Pressing “F10” will add a new device of this type, and pressing “F9” will delete this device.

## DXI Configuration Example

In many cases, there will be more than one page of information (in the above screen, there are two pages; the top right of the screen shows that this is Page 1 of 2). Pressing the “Home” key will go to the next page of parameters.

The “End” key will return to the “Database to modify” screen.

Other useful keys include:

Pressing “F1” (help) when the cursor is on a parameter gives you a quick help screen describing the parameter.

```
QNX ID (PC A)
Each PC in the system will have a unique QNX node ID. This node ID is
assigned during the installation of the QNX operating system, and cannot
change (contact DXI support for more information). If the exchange uses
only one PC, QNX ID for PC 'B' will be zero. If the exchange has two
redundant PC's, both QNX ID's must be filled in.

Any key to continue...
```

Pressing “F2” (search by number) will allow you to “go to” a particular ID number.

Pressing “F3” (search by name) will allow you to “go to” a particular named device.

Pressing “Escape” will undo any changes you made to a parameter. It can also be used to exit modifying a parameter when the “Up arrow” and “Down arrow” keys do not seem to work.

In this set of screens, the “Exchange” settings, the parameters define the control computers in an exchange.

The important information that is necessary for “Exchange” configuration is the “**Exchange ID**” number (which is used when you configure the cards, intercoms, etc. that connect to this computer), a descriptive “**Name**” for the exchange, the “**QNX ID (PC A)**” and “**QNX ID (PC B)**” settings (the computer number[s] that control this exchange), and the “**PC A PCLTA 1 Side A**”, “**PC A PCLTA 1 Side B**”, “**PC B PCLTA 1 Side A**”, and “**PC B PCLTA 1 Side B**” settings which determine the usage of the Lonworks (**PCLTA**) cards that control the equipment in this exchange.

In the default configuration, exchange 1 is already created, with the QNX ID of the computer usually being 1 (computer 1), so the “QNX ID (PC A) and “QNX ID (PC B)” is normally set correctly for a single computer system. However, if you have an exchange using redundant computers, you would set “QNX ID (PC A)” to 1, and “QNX ID (PC B)” to 2 to indicate that the two redundant computers controlling that exchange are computers 1 and 2 respectively.

If you have only one exchange and one computer, the only parameters that need to be changed from the defaults are the Lonworks card parameters. The “PC A PCLTA 1 side A” parameter should be set to the “Backplane” network for the first card to control the card cages. The “PC A PCLTA 1 side B” parameter needs to be set to “Remote A” network for the second card to control the masters.

If you have a redundant computer, you would also need to set the “PC B PCLTA 1 side A” and “PC B PCLTA 1 side B” parameters to the same as the “PC A PCLTA 1” parameters above (“Backplane” and “Remote A” respectively).

If you don't have a second Lonworks card in the computers (for example, if you do not have any keypad/display masters or DIO cards) then you need to set “PC A PCLTA 1 side B” and “PC B PCLTA 1 side B” to have “Channel” set to “No Channel”. This is normally done in the default configuration for you if you only have one Lonworks card installed.

In this example, there is only one computer, and it has two Lonworks cards for the “Backplane” and “Remote A” networks.

## DXI Configuration Example

Use the “Down arrow” key to move the cursor to the “PC A PCLTA 1 Side A” line. The screen will show that this has more information than can be displayed, with the text “hit ENTER to edit”

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
                               Page 1 of 2
Exchange ID:              1
Name (English):          Exchange 1
Name (French):           ?
Name (Spanish):          ?
QNX ID (PC A):           1
QNX ID (PC B):           0
PC A PCLTA 1 Side A:    Hit Enter to edit
PC A PCLTA 1 Side B:
PC A PCLTA 2 Side A:
PC A PCLTA 2 Side B:
PC B PCLTA 1 Side A:
PC B PCLTA 1 Side B:
PC B PCLTA 2 Side A:
PC B PCLTA 2 Side B:
```

Press the “Enter” key to edit the parameters for the first Lonworks card. The parameters that can be modified are shown at the bottom of the screen.

The parameters that can be adjusted are the “LonTalk Adapter” type and the “**Channel**”. Leave the “LonTalk Adapter” type set to the default, by pressing the “Down arrow” key to move to the “Channel” field, then press the “Right arrow” key twice to change this parameter from “Remote A” to “Backplane”.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
                               Page 1 of 2
Exchange ID:              1
Name (English):          Exchange 1
Name (French):           ?
Name (Spanish):          ?
QNX ID (PC A):           1
QNX ID (PC B):           0
PC A PCLTA 1 Side A:    Hit Enter to edit
PC A PCLTA 1 Side B:
PC A PCLTA 2 Side A:
PC A PCLTA 2 Side B:
PC B PCLTA 1 Side A:
PC B PCLTA 1 Side B:
PC B PCLTA 2 Side A:
PC B PCLTA 2 Side B:

LonTalk Adapter:        PCI PCLTA
Channel:                Backplane
```

Once you press the “Enter” key the setting will be changed and you will return to the selection screen with the cursor on the “PC A PCLTA 1 Side B” line.

If you aren’t already there, go to the “PC A PCLTA 1 Side B” line and change the Channel from “Remote B” to “Remote A” to make the second card control the masters.

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                          F9:Delete F10: Add F1: Help.
                          Page 1 of 2
Exchange ID:             1
Name (English):          Exchange 1
Name (French):           ?
Name (Spanish):          ?
QNX ID (PC A):           1
QNX ID (PC B):           0
PC A PCLTA 1 Side A:
PC A PCLTA 1 Side B: Hit Enter to edit
PC A PCLTA 2 Side A:
PC A PCLTA 2 Side B:
PC B PCLTA 1 Side A:
PC B PCLTA 1 Side B:
PC B PCLTA 2 Side A:
PC B PCLTA 2 Side B:

LonTalk Adapter:        PCI PCLTA
Channel:                 Remote A
```

For this example, this is all that is required in the Exchange configuration. Go back to the “Database to modify” screen by pressing the “End” key on the keyboard.

### 2.1.2 Editing Card information

Use the “Right arrow” key to select “Card” at the “Database to modify” prompt then press “Enter” to edit the parameters for the cards. This will show the edit screen for the first card in the system.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                          F9:Delete F10: Add F1: Help.
                          Page 1 of 3
Card ID:                 1
Name (English):          Master 1
Name (French):           ?
Name (Spanish):          ?
Exchange:                1
Net A channel:           Remote A
Net B channel:           Remote B
Type:                    MCB
Password:                0
Serial Port:             0
Baud Rate:               0 (bits per second)
Data Bits:               8 (7 or 8)
Stop Bits:               0 (0 to 2)
Parity:                  None
Flow Control:            None
Mother Card:             0
Debounce:                25 (milliseconds)
Master:                  1 (to report faults to)
Host Ack:                0 (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:                0 (0=0ff 1=0n)
Log Level:               0
```

In addition to cards in the card cages (ACB cards, SAB cards, etc), the keypad and display portion of master stations are also defined as cards. Since the default configuration includes two keypad/display masters, the cards associated with these masters are also configured. Normally, the “Card ID” for each of these keypad/display masters is set to the same as the “Master ID”. In the default configuration, cards 1 and 2 are configured for Masters 1 and 2 respectively. In the example configuration, Master 1 has a keypad and display, while Master 2 does not.

So first of all, set the Master 1 card to the correct parameters. Keypad and display component of masters need four main settings, the “Card ID”, “Name”, “Exchange”, “Net A channel”, and “Type”.

An additional optional parameter is “Master”. This is the master that gets a fault message if this card has a hardware fault. The “Master” entered in this parameter in this case is not necessarily this master number, it usually is a central control master that will receive faults that the staff member can log so they can call maintenance if necessary. If this fault reporting is not desired (or there are no keypad and display masters), this can be set to 0. In this case, the master to receive faults is Master 1, which is the central control master and hence the default value of 1 does not need to be changed.

Give the master card a descriptive name in the “Name (English)” setting. Set this to “Master Control”, the name for Master 1 in the spreadsheet. The “Exchange” value that determines which exchange (computer/s) controls the master also needs to be

## DXI Configuration Example

set. In a single computer system, this is set to the same as the Exchange ID of the exchange above. This is already set to 1, the correct value. The “Net A channel” determines which Lonworks port is used. Set this to “Remote A”, which is already the default. The “Type” is set to “MCB”, which is what the DXI system calls the “Master Control Board” or keypad and display component.

```
/ Enter: Next field.          : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                F9:Delete  F10: Add   F1: Help.
                Page 1 of 3
Card ID:         1
Name (English):  Master Control
Name (French):   ?
Name (Spanish):  ?
Exchange:        1
Net A channel:   Remote A
Net B channel:   Remote B
Type:            MCB
Password:        0
Serial Port:     0
Baud Rate:       0          (bits per second)
Data Bits:       8          (7 or 8)
Stop Bits:       0          (0 to 2)
Parity:          None
Flow Control:    None
Mother Card:     0
Debounce:        25         (milliseconds)
Master:          1          (to report faults to)
Host Ack:        0          (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:        0          (0=0ff 1=0n)
Log Level:       0
```

The default configuration sets up master 2 as having a keypad and display “card” as well. This is not needed in this example, as master 2 is touchscreen only. Go to card 2 by pressing the “page down” key, then delete card 2 by pressing the “F9” key.

The system will prompt asking if you want to delete this card. Press “y” to do so.

```
/ Enter: Next field.          : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.

Delete ID number 2?
Hit Y to accept, N to reject

Name (Spanish):  ?
Exchange:        1
Net A channel:   Remote A
Net B channel:   Remote B
Type:            MCB
Password:        0
Serial Port:     0
Baud Rate:       0          (bits per second)
Data Bits:       8          (7 or 8)
Stop Bits:       0          (0 to 2)
Parity:          None
Flow Control:    None
Mother Card:     0
Debounce:        25         (milliseconds)
Master:          1          (to report faults to)
Host Ack:        0          (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:        0          (0=0ff 1=0n)
Log Level:       0
```

Now we can add/modify the card cage cards to reflect the cards in the system configuration spreadsheet created earlier.

All cards in a card cage (such as ACB cards, SAB cards, PAB/TAB cards, TSB/TLB cards, and DIO cards) need the “**Card ID**”, “**Name**”, “**Exchange**”, “**Net A channel**”, “**Type**”, and “**Mother Card**” settings set on the first page. Each card cage card would normally have its “Net A channel” set to “Backplane” to select the correct Lonworks port. For all audio cards in the card cage (including the ACB card), the “Mother Card” should be set to “Card ID” of the ACB card that will be in the left slot of the card cage. In this case, this is the ACB card, so its mother card is set to itself (101).

An additional optional parameter is “**Master**”. This is the master that gets a fault message if this card has a hardware fault, and works in the same way as the “Master” parameter discussed above for Master cards. This is usually the master number of a central control master to log faults to, or it can be set to 0 if there are no keypad and display masters or if this feature is not desired. In this example, the master to receive faults is Master 1, which is the central control master and hence the default value of 1 that is standard in the default configuration does not need to be changed for any of the audio cards.

## DXI Configuration Example

ACB 101 is already created and is the next card in the system. The only parameter that needs to change from the default is the “Net A channel”. The “Net B channel” will automatically set itself to “No Channel” which is correct for a card cage Lonworks connection.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                     F9:Delete  F10: Add  F1: Help.
                                     Page 1 of 3
Card ID:      101
Name (English): ACB 101
Name (French): ?
Name (Spanish): ?
Exchange:     1
Net A channel: Backplane
Net B channel: No Channel
Type:         ACB_101
Password:     0
Serial Port:  0
Baud Rate:    0 (bits per second)
Data Bits:    8 (7 or 8)
Stop Bits:    0 (0 to 2)
Parity:       None
Flow Control: None
Mother Card:  101
Debounce:     25 (milliseconds)
Master:       1 (to report faults to)
Host Ack:     0 (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:     0 (0=0ff 1=0n)
Log Level:    15
```

There are more parameters for the ACB cards in other pages, but we will get into this later.

The following steps will create or modify the other cards as the configuration chart shows.

As a shortcut when creating new cards (whenever you use the “Add” function by pressing “F10”) – whenever you add any type of device, it will copy most of the settings you see on the screen right now. So if you are adding another SAB card in the card cage, if you go to any other SAB card in that card cage, it will automatically copy all of the settings (“Exchange”, “Net A Channel”, “Type”, “Mother Card”, etc) from the card you are already viewing. This can save you having to change parameters if you are creating a number of similar devices.

The first page of each of the other cards in the system will appear as shown below, where the only change necessary from the default is to set the “Net A channel” to “Backplane”.

For SAB 103, change the “Net A channel” to “Backplane”.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                     F9:Delete  F10: Add  F1: Help.
                                     Page 1 of 3
Card ID:      103
Name (English): SAB 103
Name (French): ?
Name (Spanish): ?
Exchange:     1
Net A channel: Backplane
Net B channel: No Channel
Type:         SAB_400
Password:     0
Serial Port:  0
Baud Rate:    0 (bits per second)
Data Bits:    8 (7 or 8)
Stop Bits:    0 (0 to 2)
Parity:       None
Flow Control: None
Mother Card:  101
Debounce:     25 (milliseconds)
Master:       1 (to report faults to)
Host Ack:     0 (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:     0 (0=0ff 1=0n)
Log Level:    0
```

Add PAB-401 card 117 by pressing the F10 key after modifying SAB 103:

## DXI Configuration Example

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
Card ID: 117
Name (French): ?
Name (Spanish): ?
Exchange: 1
Net A channel: Backplane
Net B channel: No Channel
Type: SAB_400
Password: 0
Serial Port: 0
Baud Rate: 0 (bits per second)
Data Bits: 8 (7 or 8)
Stop Bits: 0 (0 to 2)
Parity: None
Flow Control: None
Mother Card: 101
Debounce: 25 (milliseconds)
Master: 1 (to report faults to)
Host Ack: 0 (0-3, 0=0ff 1=0n 2&3 see help)
Set Time: 0 (0=0ff 1=0n)
Log Level: 0
    
```

Once the PAB card has been created, press the “Right arrow” key when at the “Type” parameter to go through the various card types until you get to “PAB\_401”.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
Card ID: 117
Name (English): PAB 117
Name (French): ?
Name (Spanish): ?
Exchange: 1
Net A channel: Backplane
Net B channel: No Channel
Type: PAB_401
Password: 0
Serial Port: 0
Baud Rate: 0 (bits per second)
Data Bits: 8 (7 or 8)
Stop Bits: 0 (0 to 2)
Parity: None
Flow Control: None
Mother Card: 101
Debounce: 25 (milliseconds)
Master: 1 (to report faults to)
Host Ack: 0 (0-3, 0=0ff 1=0n 2&3 see help)
Set Time: 0 (0=0ff 1=0n)
Log Level: 0
    
```

Continue editing card 201 and 203 as below. Note that these are in the second card cage and therefore have the “Mother Card” already set to card 201. If you create additional card cages (ACB cards), make sure that the ACB and the other cards in that cage have the “Mother Card” set to the same as the “Card ID” of the ACB for that cage.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
Card ID: 201
Name (English): ACB 201
Name (French): ?
Name (Spanish): ?
Exchange: 1
Net A channel: Backplane
Net B channel: No Channel
Type: ACB_101
Password: 0
Serial Port: 0
Baud Rate: 0 (bits per second)
Data Bits: 8 (7 or 8)
Stop Bits: 0 (0 to 2)
Parity: None
Flow Control: None
Mother Card: 201
Debounce: 25 (milliseconds)
Master: 1 (to report faults to)
Host Ack: 0 (0-3, 0=0ff 1=0n 2&3 see help)
Set Time: 0 (0=0ff 1=0n)
Log Level: 15
    
```

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                          F9:Delete  F10: Add  F1: Help.
                          Page 1 of 3
Card ID:                 203
Name (English):         SAB 203
Name (French):          ?
Name (Spanish):         ?
Exchange:               1
Net A channel:          Backplane
Net B channel:          No Channel
Type:                   SAB_400
Password:               0
Serial Port:            0
Baud Rate:              0          (bits per second)
Data Bits:              8          (7 or 8)
Stop Bits:              0          (0 to 2)
Parity:                 None
Flow Control:           None
Mother Card:            201
Debounce:               25          (milliseconds)
Master:                 1          (to report faults to)
Host Ack:               0          (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:               0          (0=0ff 1=0n)
Log Level:              0
```

Also add SAB card 204 by pressing “F10” on card 203 and giving it an appropriate name and number.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                          F9:Delete  F10: Add  F1: Help.
                          Page 1 of 3
Card ID:                 204
Name (English):         SAB 204
Name (French):          ?
Name (Spanish):         ?
Exchange:               1
Net A channel:          Backplane
Net B channel:          No Channel
Type:                   SAB_400
Password:               0
Serial Port:            0
Baud Rate:              0          (bits per second)
Data Bits:              8          (7 or 8)
Stop Bits:              0          (0 to 2)
Parity:                 None
Flow Control:           None
Mother Card:            201
Debounce:               25          (milliseconds)
Master:                 1          (to report faults to)
Host Ack:               0          (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:               0          (0=0ff 1=0n)
Log Level:              0
```

The last card is the TSB card, 205. Add this card and change its “Type” to “TSB”.

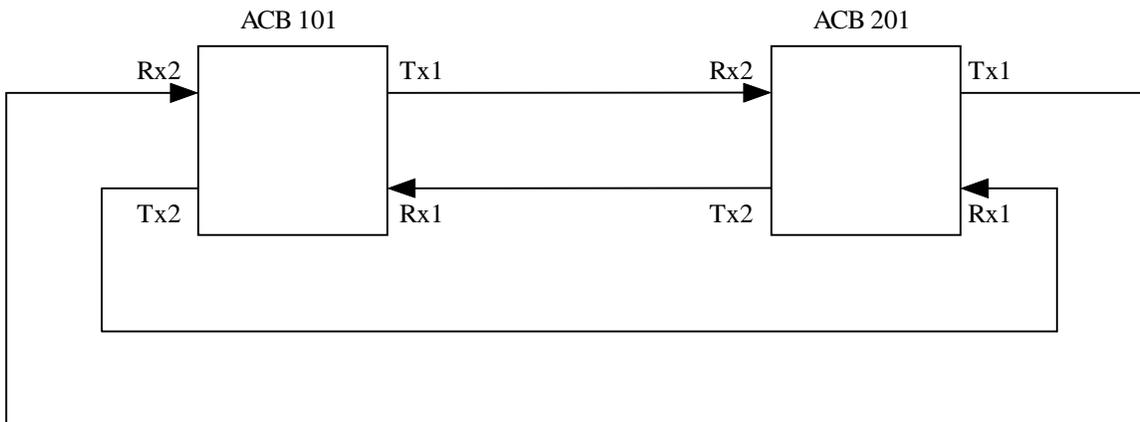
```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                          F9:Delete  F10: Add  F1: Help.
                          Page 1 of 3
Card ID:                 205
Name (English):         TSB 205
Name (French):          ?
Name (Spanish):         ?
Exchange:               1
Net A channel:          Backplane
Net B channel:          No Channel
Type:                   TSB
Password:               0
Serial Port:            0
Baud Rate:              0          (bits per second)
Data Bits:              8          (7 or 8)
Stop Bits:              0          (0 to 2)
Parity:                 None
Flow Control:           None
Mother Card:            201
Debounce:               25          (milliseconds)
Master:                 1          (to report faults to)
Host Ack:               0          (0=3, 0=0ff 1=0n 2&3 see help)
Set Time:               0          (0=0ff 1=0n)
Log Level:              0
```

To finish off, some more advanced parameters are on pages 2 or 3 of the appropriate cards. For ACB cards in a multi-cage system, you have to define how the Digital Audio trunks (CEPT trunks) are connected between exchanges.

The following diagram shows how the digital audio trunks (CEPT trunks) are connected from ACB 101 to ACB 201.

## DXI Configuration Example

### Digital Audio Trunk (CEPT) configuration



In this example, the forward loop will go from ACB 101 port 1 transmit to ACB 201 port 2 receive, and from ACB 201 port 1 transmit to ACB 101 port 2 receive.

The reverse loop will go from ACB 101 port 2 transmit to ACB 201 port 1 receive, and ACB 201 port 2 transmit to ACB 101 port 1 receive.

To set this up in the software, go to card 101 by pressing “F2” to search by number, then enter “101” at the “Card ID” prompt. Press “Home” until you are on Page 2 of 3.

Page 2 of the ACB card configurations sets the digital audio trunks up as follows. You need to set the “**CEPT loop number**” to 1, the “**CEPT Tx1**” parameter should be set to the card and port number (with a period between them) of the card and port of the receive port of the ACB card that the CEPT port 1 transmit on this card is connected to, and the “**CEPT Tx2**” parameter should be set to the card and port number of the card and port of the receive port of the ACB card that the CEPT port 2 transmit on this card is connected to.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
          F9:Delete   F10: Add   F1: Help.
Card ID:      101          Page 2 of 3
Memory address: 0          (Hex: for some PC slot cards)
DXI node:     0          (for PLC host cards)
PLC node:     0          (for PLC host cards)
PLC base reg: 0          (for PLC host cards)
PLC routing path: 0      (for PLC host cards)
IP In Port:   10004      (typically 10004)
IP Out Port:  11001      (typically 11001)
Send NOOP every: 0      (seconds)
Inactivity timeout: 0    (seconds)
2ndary ACB card ID: 0    (for redundant ACB cards)
CEPT loop number: 1      (for ACB cards in CEPT loop)
CEPT Tx1:     201.2      (To Rx on Card.CEPT)
CEPT Tx2:     201.1      (To Rx on Card.CEPT)
RNS card:     0          (for redundant card cages)
En/Dis host cmds: 0
Host mode:    0          (0=Peer 1=Poll 2=Cimplicity)
ExtBP In:    0          (In connector connected to)
ExtBP Out:    0          (Out connector connected to)
  
```

Repeat for ACB card 201, changing the “**CEPT loop number**”, “**CEPT Tx1**” and “**CEPT Tx2**” parameters appropriately:

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                          F9:Delete  F10: Add  F1: Help.
Card ID:                 201                Page 2 of 3
Memory address:         0                  (Hex: for some PC slot cards)
DXI node:               0                  (for PLC host cards)
PLC node:              0                  (for PLC host cards)
PLC base reg:          0                  (for PLC host cards)
PLC routing path:      0                  (for PLC host cards)
IP In Port:            10004              (typically 10004)
IP Out Port:           11001              (typically 110XX)
Send NOOP every:       0                  (seconds)
Inactivity timeout:    0                  (seconds)
2ndary ACB card ID:    0                  (for redundant ACB cards)
CEPT loop number:      1                  (for ACB cards in CEPT loop)
CEPT Tx1:              101.2             (To Rx on Card.CEPT)
CEPT Tx2:              101.1           (To Rx on Card.CEPT)
RNS card:              0                  (for redundant card cages)
En/Dis host cmds:     0
Host mode:             0                  (0=Peer 1=Poll 2=Cimplicity)
ExtBP In:              0                  (In connector connected to)
ExtBP Out:            0                  (Out connector connected to)
```

The pod paging functions in the configuration charts above boost the PAB power by “bridging” two outputs together with Pod A using outputs 5 and 6, and Pod B using outputs 7 and 8.

This bridging function of the PAB card needs configuration parameters on Page 3 of the PAB card.

To set this up, go to PAB card 117, page 3, and change the “Merge Out 6 with 5” and “Merge Out 8 with 7” as below.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry. End: Quit.
                          F9:Delete  F10: Add  F1: Help.
Card ID:                 117                Page 3 of 3
Comm ALM Action:         Unknown
ID 1:                   0
ID 2:                   0
Master:                 0
Comm FIX Action:         Unknown
ID 1:                   0
ID 2:                   0
Master:                 0
Merge Out 2 with 1:     0                  (0=No, 1=Yes)
Merge Out 3 with 2:     0                  (0=No, 1=Yes)
Merge Out 4 with 3:     0                  (0=No, 1=Yes)
Merge Out 5 with 4:     0                  (0=No, 1=Yes)
Merge Out 6 with 5:     1                  (0=No, 1=Yes)
Merge Out 7 with 6:     0                  (0=No, 1=Yes)
Merge Out 8 with 7:     1                 (0=No, 1=Yes)
Fault FAAS Pt:         0.117.2
```

Exit out of this screen with the “End” key to go back to the “Database to modify” screen.

### 2.1.3 Editing Master information

At the “Database to modify” screen, use the “Right arrow” key to select “**Master**” then press “Enter” to edit the parameters for the masters.

Masters need to set the “**Is Group**” setting to “Master”, “**Exchange**” to the exchange number controlling it, “**Main spkr card ID**” and “**Main spkr resource**” to the card and channel of where its first audio wire pair is connected to, and “**Full duplex**” to 1 to indicate that it is a full duplex capable master. Almost all current DXI masters are full duplex capable.

For masters with a keypad/display, the “**MCB card ID**” needs to be set to the card number of its keypad and display (usually the same as the “Master ID”) and its “**Display**” type set to “4 x 20 LCD”. Touchscreen masters and telephones would set the “**MCB card ID**” to 0 and the “**Display**” to 0.

The optional parameter “**Vox**” determines whether the “Voice Operating Switching” operation is desired for use without a push to talk switch. In noisy control room environments on a handsfree speaker/microphone, Vox is normally not recommended so it is off (set to 0) for the default masters.

## DXI Configuration Example

In the example, Master 1 is a full master with keypad and display, connected to card 103 channel 16/17, using MCB keypad/display card 1.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
                               Page 1 of 2
Master ID:      1
Is Group:      Master
Exchange:      1
MCB card ID:   1
Main spkr card ID: 103
Main spkr resource: 16 (for full duplex, must be even channel)
Vox:           0 (0=False 1=True)
Full duplex:   1 (0=Half 1=Full 2=Mic only)
MCB audio xfer stn: 0
Ext audio xfer stn: 0
Trouble Lite Stn ID: 0
Display:      4 x 20 LCD
Hands free card ID: 0
Hands free resource: 0
Hands free pulse: 0 (milliseconds)
Input level:   0 (0=Mic 1=Line) (for AIO)
Output level:  0 (0=Mic 1=Line) (for AIO)
Auto PTI output: 0 (0=Off 1=On) (for AIO)
PTI input on SWB: 0 (0=SWA 1=SWB) (for SAB-300/400)
Ext buzzer card ID: 0
Ext buzzer resource: 0
Ext buzzer pulse: 0 (milliseconds)
```

Master 2 is a touchscreen master connected to channel 14/15 of SAB card 103, having no MCB keypad/display card.

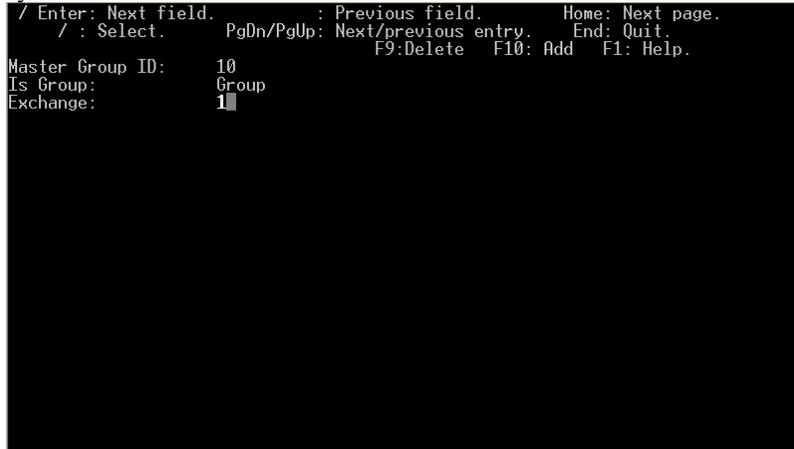
```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
                               Page 1 of 2
Master ID:      2
Is Group:      Master
Exchange:      1
MCB card ID:   0
Main spkr card ID: 103
Main spkr resource: 14 (for full duplex, must be even channel)
Vox:           0 (0=False 1=True)
Full duplex:   1 (0=Half 1=Full 2=Mic only)
MCB audio xfer stn: 0
Ext audio xfer stn: 0
Trouble Lite Stn ID: 0
Display:      None
Hands free card ID: 0
Hands free resource: 0
Hands free pulse: 0 (milliseconds)
Input level:   0 (0=Mic 1=Line) (for AIO)
Output level:  0 (0=Mic 1=Line) (for AIO)
Auto PTI output: 0 (0=Off 1=On) (for AIO)
PTI input on SWB: 0 (0=SWA 1=SWB) (for SAB-300/400)
Ext buzzer card ID: 0
Ext buzzer resource: 0
Ext buzzer pulse: 0 (milliseconds)
```

Master 3 is a telephone master connected on TSB card 105, telephone channel 1. Telephones do not have a push to talk switch so we should set the “Vox” to 1 to turn it on. Telephones actually always have the Vox set on (even if this is set to 0) but this will clarify for the maintenance staff that these are operated by voice switching.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete  F10: Add  F1: Help.
                               Page 1 of 2
Master ID:      3
Is Group:      Master
Exchange:      1
MCB card ID:   0
Main spkr card ID: 205
Main spkr resource: 1 (for full duplex, must be even channel)
Vox:           1 (0=False 1=True)
Full duplex:   1 (0=Half 1=Full 2=Mic only)
MCB audio xfer stn: 0
Ext audio xfer stn: 0
Trouble Lite Stn ID: 0
Display:      None
Hands free card ID: 0
Hands free resource: 0
Hands free pulse: 0 (milliseconds)
Input level:   0 (0=Mic 1=Line) (for AIO)
Output level:  0 (0=Mic 1=Line) (for AIO)
Auto PTI output: 0 (0=Off 1=On) (for AIO)
PTI input on SWB: 0 (0=SWA 1=SWB) (for SAB-300/400)
Ext buzzer card ID: 0
Ext buzzer resource: 0
Ext buzzer pulse: 0 (milliseconds)
```

Master groups need the “Is Group” set to “Group” and the “Exchange” set the exchange that most of the masters are on.

In this example, to create a master group to allow circulation calls to call to both Master 1 and Master 2, create Master 10, and change “Is Group” to “Group”. The Exchange parameter is already set to 1, the correct value for a single exchange system.



As usual, once done editing the masters, return to the “Database to modify” screen by pressing the “End” key.

### 2.1.4 Editing Station information

The next type of device to add is intercom stations. Select “Station” from the “Database to modify” screen.

The default stations are stations 1 and 2. The numbers we are using in this example are not 1 and 2, so the first thing to do is delete station 1 and 2 by pressing “F9” when on those stations.

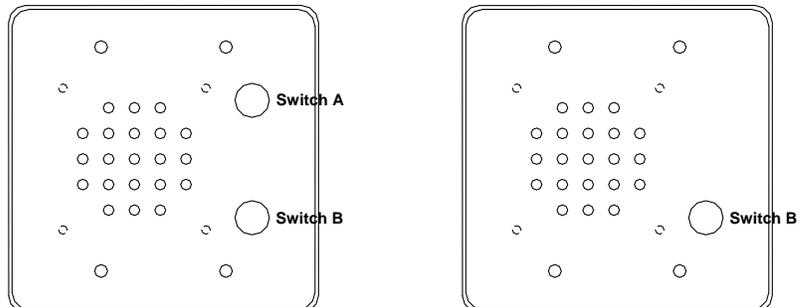
Stations require the “**Station type**”, “**Audio Card ID**” and “**Audio resource**”, and “**Exchange**” parameters set on the first page. Most stations have the “**Station type**” set to “CRQ”, and “**Audio Card ID**” and “**Audio resource**” set to the card and channel, respectively, of the SAB where the station is connected.

If you have a 401 series LED station, the additional settings to control the LED properly are “**Output card**” and “**Output resource**” which indicate where the LED is. These are set to the card and channel of the SAB where the station is connected, the same values that are in “**Audio Card ID**” and “**Audio resource**” above. The “**Station has LED**” setting should be set to 1 to indicate that it is a 401 series station. Only set these for 401 series stations, not 400 series stations.

Also very important, the buttons on the intercom stations are on Page 2, and need to have the “**Switch 1 action**”, “**Switch 1 type**”, “**Switch 1 card**”, “**Switch 1 resource**”, and “**Switch 1 side**” settings set properly in order for the call request button to work. For a standard call request button, the “**Switch 1 action**” is set to “Call Request”. The “**Switch 1 card**” and “**Switch 1 resource**” should be set to the card and channel, respectively, of the SAB where the intercom station is connected.

The “**Switch 1 side**” setting determines which button on the station that this switch corresponds to. Harding intercoms were designed to have up to two buttons. The top right button is designated button “A”, and the bottom right button is designated button “B”. However, most intercoms have only one button in the bottom right corner, this still corresponds to the “B” button and needs to be configured as such.

For a one button Harding (400 series) intercom, the switch type is set to “MNO” (momentary normally open) and the switch side is set to “B” (bottom button).



## DXI Configuration Example

For a generic (or 300 series) intercom, the switch type is set to “Unsupervised MNO” and the switch side is set to “A” (since there is only one button with a dry contact unsupervised switch).

Additional buttons (for example: music switches) would have the Switch 2 settings set appropriately, with the “**Switch 2 action**” being set to the appropriate action that the switch will perform when it is pressed, and the remaining settings indicating the type of switch, and where it is located (likely with the same card, resource, and type as switch 1, but using side “A”, for the top button).

For this configuration, add a new station with ID 101. This station will be connected to SAB card 103 channel 1, will be a 400 series station, and will have a call request button on the same channel. Page 1 will look like the following:

```
/ Enter: Next field.          : Previous field.      Home: Next page.
/ : Select.                  PgDn/PgUp: Next/previous entry. End: Quit.
                             F8:Renumber  F9:Delete  F10: Add  F1: Help.
Station ID:                  101                               Page 1 of 2
Station type:                 CR0
Audio card ID:               103
Audio resource:              1
VideoIn Res 1:               0.0 (Card.Resource.Preset)
VideoIn Res 2:               0.0 (Card.Resource.Preset)
VideoIn Res 3:               0.0 (Card.Resource.Preset)
VideoIn Res 4:               0.0 (Card.Resource.Preset)
VideoOut card ID:            0
VideoOut resource:           0
Output card:                  0
Output resource:              0
Exchange:                    1
Station has LED:              0 (0=No, 1=Yes)
Station camera list:
Sin-Camera map:
Alarm FAAS Pt:               0.101.1
Dsb1 FAAS Pt:                0.0.0
Fault FAAS Pt:               0.0.2
Secondary FAAS Pt:           0.0.0
Full duplex:                  0 (0=Half 1=Full)
Sidetone:                     0 (0=Off 1=On)
```

Remember the switch information on Page 2:

```
/ Enter: Next field.          : Previous field.      Home: Next page.
/ : Select.                  PgDn/PgUp: Next/previous entry. End: Quit.
                             F8:Renumber  F9:Delete  F10: Add  F1: Help.
Station ID:                  101                               Page 2 of 2
Switch 1 action:             Call Request
Switch 1 type:               MNO
Switch 1 card:               103
Switch 1 resource:           1
Switch 1 side:                B (A - D)
Switch 2 action:             Unknown
Switch 2 type:               Unknown
Switch 2 card:                0
Switch 2 resource:           0
Switch 2 side:                ? (A - D)
Switch 3 action:             Unknown
Switch 3 type:               Unknown
Switch 3 card:                0
Switch 3 resource:           0
Switch 3 side:                ? (A - D)
Switch 4 action:             Unknown
Switch 4 type:               Unknown
Switch 4 card:                0
Switch 4 resource:           0
Switch 4 side:                ? (A - D)
PTT on SWB:                  0 (0=SWA 1=SWB)
```

You can duplicate most parameters by pressing “F10”. You will still have to enter the new “**Station ID**”, “**Audio card ID**”, and “**Audio Resource**” on the first page, and the “**Switch 1 card**” and “**Switch 1 resource**” on the second page.

Adding station 102 gives the following two pages:

## DXI Configuration Example

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry.  End: Quit.
                        F8:Renumber  F9:Delete  F10: Add  F1: Help.
Station ID:             102                Page 1 of 2
Station type:           CR0
Audio card ID:          103
Audio resource:         2
VideoIn Res 1:          0.0                (Card.Resource.Preset)
VideoIn Res 2:          0.0                (Card.Resource.Preset)
VideoIn Res 3:          0.0                (Card.Resource.Preset)
VideoIn Res 4:          0.0                (Card.Resource.Preset)
VideoOut card ID:       0
VideoOut resource:      0
Output card:            0
Output resource:        0
Exchange:              1
Station has LED:        0      (0=No, 1=Yes)
Station camera list:
Stn-Camera map:
Alarm FAAS Pt:          0.102.1
Dsbl FAAS Pt:           0.0.0
Fault FAAS Pt:          0.102.2
Secondary FAAS Pt:      0.0.0
Full duplex:            0      (0=Half 1=Full)
Sidetone:               0      (0=0ff 1=0n)

```

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry.  End: Quit.
                        F8:Renumber  F9:Delete  F10: Add  F1: Help.
Station ID:             102                Page 2 of 2
Switch 1 action:        Call Request
Switch 1 type:          MNO
Switch 1 card:          103
Switch 1 resource:      2
Switch 1 side:          B                  (A - D)
Switch 2 action:        Unknown
Switch 2 type:          Unknown
Switch 2 card:          0
Switch 2 resource:      0
Switch 2 side:          ?                  (A - D)
Switch 3 action:        Unknown
Switch 3 type:          Unknown
Switch 3 card:          0
Switch 3 resource:      0
Switch 3 side:          ?                  (A - D)
Switch 4 action:        Unknown
Switch 4 type:          Unknown
Switch 4 card:          0
Switch 4 resource:      0
Switch 4 side:          ?                  (A - D)
PTT on SWB:            0      (0=SWA 1=SWB)

```

Repeat for stations 103-110, 203-210, and 303-310, changing the parameters on both pages appropriately.

Paging amplifier outputs such as DXI amplifier ports on PAB-401 or TAB-401 cards, or line level outputs on AIO-400 or AOB-400 cards are also created as intercom stations, but with their “**Station type**” set to “PageAmp” and having no switches on the second page. Page amplifier station 10001 is created as follows.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.              PgDn/PgUp: Next/previous entry.  End: Quit.
                        F8:Renumber  F9:Delete  F10: Add  F1: Help.
Station ID:             10001             Page 1 of 2
Station type:           PageAmp
Audio card ID:          117
Audio resource:         1
VideoIn Res 1:          0.0                (Card.Resource.Preset)
VideoIn Res 2:          0.0                (Card.Resource.Preset)
VideoIn Res 3:          0.0                (Card.Resource.Preset)
VideoIn Res 4:          0.0                (Card.Resource.Preset)
VideoOut card ID:       0
VideoOut resource:      0
Output card:            0
Output resource:        0
Exchange:              1
Station has LED:        0      (0=No, 1=Yes)
Station camera list:
Stn-Camera map:
Alarm FAAS Pt:          0.10001.1
Dsbl FAAS Pt:           0.0.0
Fault FAAS Pt:          0.10001.2
Secondary FAAS Pt:      0.0.0
Full duplex:            0      (0=Half 1=Full)
Sidetone:               0      (0=0ff 1=0n)

```

## DXI Configuration Example

```
/ Enter: Next field.          : Previous field.          Home: Next page.
/ : Select.                  PgDn/PgUp: Next/previous entry. End: Quit.
                               F8:Renumber F9:Delete F10: Add F1: Help.
                               Page 2 of 2
Station ID: 10001
Switch 1 action: Unknown
Switch 1 type: Unknown
Switch 1 card: 0
Switch 1 resource: 0
Switch 1 side: ? (A - D)
Switch 2 action: Unknown
Switch 2 type: Unknown
Switch 2 card: 0
Switch 2 resource: 0
Switch 2 side: ? (A - D)
Switch 3 action: Unknown
Switch 3 type: Unknown
Switch 3 card: 0
Switch 3 resource: 0
Switch 3 side: ? (A - D)
Switch 4 action: Unknown
Switch 4 type: Unknown
Switch 4 card: 0
Switch 4 resource: 0
Switch 4 side: ? (A - D)
PTT on SWB: 0 (0=SWA 1=SWB)
```

Repeat to create page amplifier stations 10002-10004, 20001, and 30001.

Once you are finished editing the stations, return to the “Database to modify” screen by pressing the “End” key.

### 2.1.5 Editing Digital Audio Trunk information

To finish off the Digital Audio trunk (CEPT) configuration all you need to do is create a CEPT loop. Go to the “CEPT” database, and add “CEPT ID” 1. No other parameters are necessary.

```
/ Enter: Next field.          : Previous field.          Home: Next page.
/ : Select.                  PgDn/PgUp: Next/previous entry. End: Quit.
                               F9:Delete F10: Add F1: Help.
CEPT ID: █
```

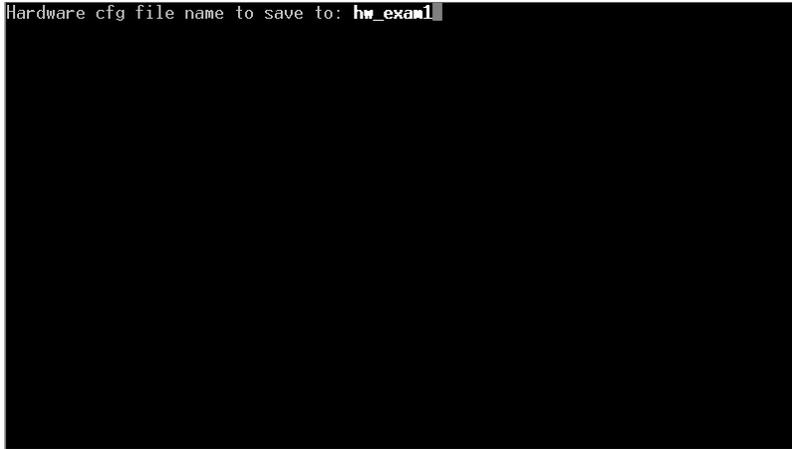
This completes the hardware portion of the configuration. Return to the “Database to modify” screen by pressing the “End” key.

### 2.1.6 Saving the hardware configuration file

At the “Database to modify” screen, and select the “Exit” option.

The system will prompt for the “Hardware cfg file name to save to”.

The default entry is the old file name (in this case, the factory default name of hw\_xlon or hw\_xlon2). Enter the new file name to save this hardware file to, in this case “hw\_exam1” and then press “Enter”.



You will then be returned to the “DXI Maint” screen.

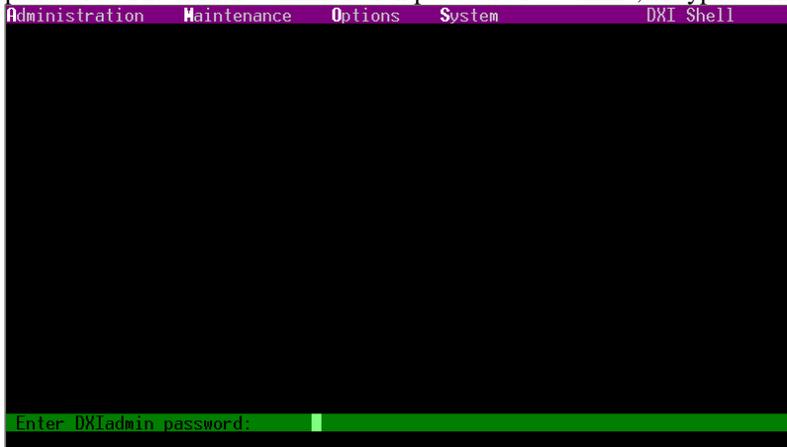
Return to the main set of menus by pressing “x” to exit the “DXI Maint” screen and go back to the main “DXI Shell” screen.

## 2.2 Editing system software configuration

You should be at the main “DXI Shell” screen to begin this section.

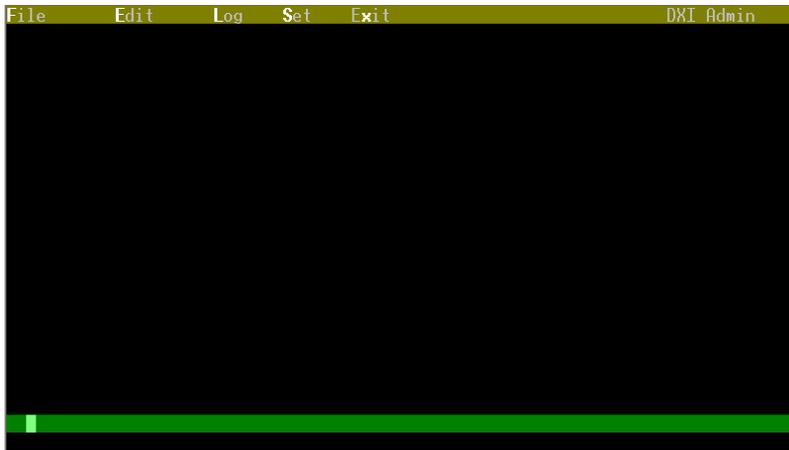
The second step of creating the configuration is to define the software parameters, such as station naming, call routing, etc. These software parameters of the DXI system are edited in the “Administration” set of menus.

To go to the administration set of menus from the main set of menus, press the “a” key. The computer will prompt for a password. The default administration password is “admin”, so type “admin” and press the “Enter” key.

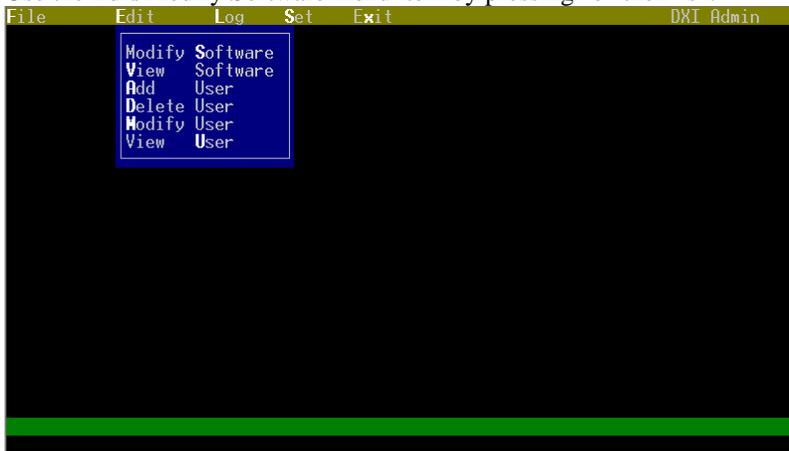


This should get you to the Administration set of menus

## DXI Configuration Example



Use the Edit/Modify Software menu item by pressing “e” then “s”.



This will bring up a screen asking what database you would like to modify.



Much like in the previous screens while editing the hardware part of the configuration, when you are modifying the software configuration, generally you would modify devices in the order suggested – press the “Right arrow” key to go to the next type of device, hit “Enter” to edit and add these types of devices, then go back to the “Database to modify” screen, press the “Right arrow” to select the next type of device, and repeat until all types of devices used are defined. Then you can use the “Right arrow” key to select “Exit” then hit “Enter” to exit to the administration set of menus.

## 2.2.1 Editing Master information

To start with, use the “Right arrow” key to select “Master” then press the “Enter” key.

The master screen defines the software parameters (names, call forwarding, permissions, and host port parameters) for the masters.

The important parameters on the first page that you need to enter are “Name”, “# Alarm width”, and “Secondary ID”. “# Alarm width” needs to be set to 3 for regular (touchscreen and stand-alone) masters, or to the number of telephone dial digits of intercom phone numbers on telephone masters. This example has up to 3 digit station numbers (stations are numbered 101-310) so telephones should also have “# Alarm width” set to 3. “Secondary ID” is the master number of the master that this master gets forwarded to when it is disabled, or does not answer calls within an “Idle timeout” period.

Other parameters on the first page that may be important (but are usually set to the proper values by default) are “Enabled on startup” (should be set to 1), “Call announce” (should be set to 1 to beep at the start and end of a call, or 0 for no beep), and “MCB menu type” (should always be 1). If a master is disabled (if it is taken over or gives control to Central, etc.) the “Password” setting is the “password” (number) that must be typed in on the master keypad to re-enable the master to allow it to resume control.

The first page for master 1, with the only change from the default being the “Name” of the master, is as follows.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                           F1: Help.
Master ID: 1 Page 1 of 4
Name (English): Master Control
Name (French): ?
Name (Spanish): ?
Password: 1
Secondary ID: 0
Enabled on startup: 1 (1=Enabled 0=Disabled)
Call priority: 0
External host: None
Ext host card: 0
Idle timeout: 0 (seconds)
Keypress timeout: 0 (seconds)
Login retries: 0
Login timeout: 0 (seconds)
Unman timeout: 0 (seconds)
Call announce: 1
Monitor announce: 0
Default announce: 1
Event remind rate: 0 (seconds)
MCB menu type: 1 (0=Small 1=Full)
# Alarm width: 3

```

The second, third, and fourth pages have various other settings scattered throughout them.

Some of the important settings are the “master permissions”, which are lists of stations, masters, and page zones that this master can call to. Permission lists (and other “lists” in the DXI system) allow entering a “list” of numbers.

Lists can have multiple ID numbers separated with “-” to indicate a range of numbers, and/or can have ID numbers separated with “,” to indicate multiple numbers.

For example, if you wanted to give this master permission to call intercom stations 1, 2, and 10, the permission list would read “1-2,10” to indicate that stations 1-2 and station 10 are in the list.

You can also use “\*” to indicate all ID numbers of that type, or indicate a range that doesn’t have consecutive ID numbers (I.E. 101-310, even if you don’t have any stations numbered 111-200 or 211-300), and the software will fill in the list with what numbers are actually in the configuration.

In the screen below, the station call list was set to “101-310”, and the system automatically changed the list to read “101-110,201-210,301-310” as these are the valid station numbers in this range.

The second page, showing the result of changing the permissions to “101-310” for the Station call list and “3” for the Master enable list, is below.

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                          F1: Help.
Master ID: 1 Page 2 of 4
Annunciate alarms: 1 (0=AtSecondary 1=AtPrimary)
External buzzer: 0 (0=NONE 1=Relay1 2=Relay2)
Ext call Q light: 0 (0=NONE 1=Relay1 2=Relay2)
Station call list: 01-110,201-210,301-
Music zone list:
Master enable list: 3
Card list:
Auxiliary fns:
Event priorities:
Monitor ID: 0
Monitor rate: 0 (seconds)
Stn Monitor list:
PLC Out register: 0 (decimal)
PLC In register: 0 (decimal)
PLC Queue reg: 0 (decimal)
PLC Queue length: 0 (decimal)
Radio Monitor list:
Panel LED in Call: Unknown_Output
Can enable self: 1 (1=Yes 0=No)
Can disable self: 0 (1=Yes 0=No)
```

The common permissions you may want to change are as follows:

“**Station call list**” on Page 2 lists the stations that this master can call.

“**Master enable list**” on Page 2 lists the masters that this master can enable or disable.

“**Master call list**” on Page 3 lists the masters that this master can call

“**Page call list**” on Page 3 lists the page zones that this master can call

Other settings on Page 3 are the volume settings of the master speaker when the master is in various types of calls. In the DXI system, volume levels range from 0 (quietest, but not off), to 7 (loudest). The mid range value is 3, which is normally the recommended value to start with.

The commonly changed speaker parameters on Page 3 are “**Initial call vol**” which is the volume of the master speaker when making a call, and “**Initial monitor vol**” which is the volume of the master speaker when monitoring an intercom.

Also of note is that there is a setting named “**Initial sensitivity**” on Page 3. On selected card types, this can adjust the master microphone sensitivity up or down. However, the only cards that can adjust the sensitivity are TSB/TLB cards, AIO/AIB cards, and TAB cards, hence the “**Initial sensitivity**” does not do anything on masters connected to an SAB card (which accounts for most masters). This is set to 3 (midrange) for consistency.

Other “setup” parameters for masters on Page 3 include the “**Initial buzzer vol**” which is the volume of the master beeper when new calls are queued on the master, and “**Initial backlight**” which is the brightness of the backlight on LCD masters. These latter values are something that can be adjusted from the master menus as well.

For this master, the only settings on Page 3 that need to be changed is the “**Master call list**”, which is set to “2-3”.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                          F1: Help.
Master ID: 1 Page 3 of 4
Initial call vol: 3
Initial music vol: 3
Initial page vol: 3
Initial monitor vol: 3
Initial buzzer vol: 3
Initial sensitivity: 3
Initial backlight: 3
Caller ID list: 0 (0 = off, 1 = on)
Page call list:
Conf call list:
Signal call list:
ALA set list:
Master call list: 2-3
Radio call list:
Visiting call list:
PLC Out file num: 0 (decimal)
PLC In file num: 0 (decimal)
PLC Queue file num: 0 (decimal)
Call Req timeout: 0 (seconds)
PLC Hshake register: 0 (decimal)
PLC HS file num: 0 (decimal)
```

The settings on page 4 are rarely used and are not shown in this example.

## DXI Configuration Example

In summary, Master 1 changed the “**Name (English)**” on Page 1 to “**Master Control**”, “**Station call list**” on Page 2 to “**101-310**”, “**Master enable list**” on Page 2 to “**3**”, and “**Master call list**” on Page 3 to “**2-3**”. This allows Master 1 to call all stations, all other masters, and to enable and disable pod master 3 (to take control over the intercoms in that area).

Use the “Page down” key to go to master 2, and then make the following changes.

Change the “**Name (English)**” on Page 1 to “**Touchscreen Control**”, “**Station call list**” on Page 2 to “**101-310**”, “**Master enable list**” on Page 2 to “**3**”, and “**Master call list**” on Page 3 to “**1,3**”. This allows Master 2 to call all stations, all other masters, and to enable and disable pod master 3.

The following three screens show the changes made for Master 2.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                      F1: Help.
Master ID:          2                Page 1 of 4
Name (English):    Touchscreen Control
Name (French):     ?
Name (Spanish):    ?
Password:          2
Secondary ID:      0
Enabled on startup: 1                (1=Enabled 0=Disabled)
Call priority:     0
External host:     None
Ext host card:     0
Idle timeout:      0                (seconds)
Keypress timeout: 0                (seconds)
Login retries:     0
Login timeout:     0                (seconds)
Unman timeout:    0                (seconds)
Call announce:     1
Monitor announce: 0
Default announce: 1
Event remind rate: 0                (seconds)
MCB menu type:     1                (0=Small 1=Full)
# Alarm width:     3
```

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                      F1: Help.
Master ID:          2                Page 2 of 4
Annunciate alarms: 1                (0=AtSecondary 1=AtPrimary)
External buzzer:    0                (0=NONE 1=Relay1 2=Relay2)
Ext call Q light:  0                (0=NONE 1=Relay1 2=Relay2)
Station call list: 101-110,201-210,301-
Music zone list:
Master enable list: 3
Card list:
Auxiliary fns:
Event priorities:
Monitor ID:         0
Monitor rate:       0                (seconds)
Stn Monitor list:
PLC Out register:  0                (decimal)
PLC In register:   0                (decimal)
PLC Queue reg:     0                (decimal)
PLC Queue length: 0                (decimal)
Radio Monitor list:
Panel LED in Call: Unknown_Output
Can enable self:   1                (1=Yes 0=No)
Can disable self: 0                (1=Yes 0=No)
```

## DXI Configuration Example

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                          F1: Help.
Master ID:      2          Page 3 of 4
Initial call vol: 3
Initial music vol: 3
Initial page vol: 3
Initial monitor vol: 3
Initial buzzer vol: 3
Initial sensitivity: 3
Initial backlight: 3
Caller ID list: 0          (0 = off, 1 = on)
Page call list:
Conf call list:
Signal call list:
ALA set list:
Master call list: 1,3
Radio call list:
Visiting call list:
PLC Out file num: 0        (decimal)
PLC In file num: 0        (decimal)
PLC Queue file num: 0     (decimal)
Call Req timeout: 0       (seconds)
PLC Hshake register: 0    (decimal)
PLC HS file num: 0        (decimal)

```

For Master 3, change the “Name (English)” on Page 1 to “Telephone master”, “Secondary ID” on Page 1 to “10”, “Station call list” on Page 2 to “201-310”, “Master enable list” on Page 2 to “ ” (to blank it out), and “Master call list” on Page 3 to “1-2”. This allows Master 3 to forward calls to the Central Control group when it is disabled or timed out, and allows Master 3 to only call pod intercoms (201-210 and 301-310) and Masters 1 and 2. Master 3 is also not permitted to give control back to itself in a takeover situation.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                          F1: Help.
Master ID:      3          Page 1 of 4
Name (English): Telephone Master
Name (French):  ?
Name (Spanish): ?
Password:      0
Secondary ID:  10
Enabled on startup: 1      (1=Enabled 0=Disabled)
Call priority: 0
External host:  None
Ext host card: 0
Idle timeout:  0          (seconds)
Keypress timeout: 0      (seconds)
Login retries: 0
Login timeout: 0          (seconds)
Unman timeout: 0          (seconds)
Call announce: 1
Monitor announce: 0
Default announce: 1
Event remind rate: 0      (seconds)
MCB menu type: 1          (0=Small 1=Full)
# Alarm width: 3

```

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                          F1: Help.
Master ID:      3          Page 2 of 4
Annunciate alarms: 1      (0=AtSecondary 1=AtPrimary)
External buzzer: 0        (0=NONE 1=Relay1 2=Relay2)
Ext call 0 light: 0      (0=NONE 1=Relay1 2=Relay2)
Station call list: 201-210,301-310
Music zone list:
Master enable list:
Card list:
Auxiliary fns:
Event priorities:
Monitor ID:      0
Monitor rate:    0        (seconds)
Stn Monitor list:
PLC Out register: 0       (decimal)
PLC In register: 0       (decimal)
PLC Queue reg:  0       (decimal)
PLC Queue length: 0     (decimal)
Radio Monitor list:
Panel LED in Call: Unknown_Output
Can enable self: 0        (1=Yes 0=No)
Can disable self: 0       (1=Yes 0=No)

```

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                                    F1: Help.
Master ID:          3                Page 3 of 4
Initial call vol:  3
Initial music vol: 3
Initial page vol:  3
Initial monitor vol: 3
Initial buzzer vol: 3
Initial sensitivity: 3
Initial backlight:  3
Caller ID list:     0                (0 = off, 1 = on)
Page call list:
Conf call list:
Signal call list:
ALA set list:
Master call list:   1-2
Radio call list:
Visiting call list:
PLC Out file num:  0                (decimal)
PLC In file num:   0                (decimal)
PLC Queue file num: 0                (decimal)
Call Req timeout:  0                (seconds)
PLC Hshake register: 0              (decimal)
PLC HS file num:   0                (decimal)
```

The last “master” is Master Group 10, which should be the “Central” group consisting of Masters 1 and 2.

Master Groups commonly need only their “**Name**” “**Secondary ID**”, and “**Master members**” changed.

The “Secondary ID” is the master that these calls go to if all of the masters in this group are disabled (or 0 if there is no fallback master). The “Master members” is a list of masters within this group.

The screen for Master Group 10, showing the changes for the “Name” and “Master members” for the example is as below.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                      F1: Help.
Master Group ID:      10
Name (English):      Central
Name (French):       ?
Name (Spanish):      ?
Shared queue:        0          (0=False 1=True)
Secondary ID:        0
Annunciate alarms:  0          (0=AtSecondary 1=AtPrimary)
Master members:     1-2

```

Exit to the edit screen by pressing the “End” key.

## 2.2.2 Editing Station information

At the “Database to modify” screen, use the “Right arrow” key to select “Station” and hit “Enter”.

The system will show the screens for the first station (101 in this case).

Stations have the following important parameters in the Modify Software screens:

On Page 1, the important settings needed for most stations are “**Name**” and “**Master**”. The “**Master**” setting is which master number (or master group number) that this station calls into when its call button is pressed.

If you have 401 series LED stations, then you will probably also want to set “**LED flash on CRQ**” to “1” so that when the call button is pressed and the station is in a master’s queue waiting to be answered, the LED will flash.

Page 2 has the settings “**Initial volume**” and “**Call announce**”. These perform the same functions as the equivalent parameters for Masters – “**Initial volume**” is the speaker volume for the station, and “**Call announce**” determines if it has a beep when it is connected to. If “**Call announce**” is 1 then there is a beep heard on the station at the start and end of a call, or if it is 0 then there is no beep at the start and end of a call.

Also, note that there is a setting named “**Initial sensitivity**” on Page 3. On selected card types, this can adjust the station microphone sensitivity up or down. However, the only cards that can adjust the sensitivity are TSB/TLB cards, AIO/AIB cards, and TAB cards, hence for the practical purposes of stations, the “**Initial sensitivity**” only works for talkback stations on TAB cards. For regular stations on SAB cards, this is set to 3 (midrange) for consistency.

Pages 3 to 11 have options that are very rarely used so are skipped in this example.

The following screens show the settings for Station 101 after the “**Name**” on Page 1 is changed to “Door IC101”, the “**Master**” on Page 1 is changed to “10” the “**Initial volume**” and “**Initial sensitivity**” on Page 2 are set to “3”, and the “**Call announce**” on Page 2 is set to “1”.

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                           F1: Help.
Station ID:      101      Page 1 of 11
Name (English):  Door IC101
Name (French):   ?
Name (Spanish):  ?
Master:          10
ERQ timeout:     0      (seconds)
Pulse output length: 0      (.125 second increments)
LED flash on CRQ: 0      (0=Off 1=Flash 2=Solid)
Station group list:
Event priorities:
Output when done: 6      (1=0n 6=0ff)
Alternate ON list:
Alternate OFF list:
Interlock list:
Page amp station: 0      (for Page stations)
Addl Output list:
Monitor output on: 0      (0 = on, 1 = off)
Camera starts on: 0      (0 = Call, 1 = CRQ)
```

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                           F1: Help.
Station ID:      101      Page 2 of 11
Initial volume:  3      (0 to 9)
Initial sensitivity: 3      (0 to 9)
Input level:     0      (0=Mic 1=Line) (for AIO)
Output level:    0      (0=Mic 1=Line) (for AIO)
Auto PTT output: 0      (0=Off, 1=0n) (for AIO)
Call announce:   1
Monitor announce: 0
Call acknowledge: 0      (0=0ff, 1=0n)
```

Repeat these same changes for stations 102 to 110, with the only differences between station 101 and the other stations being the station name.

Stations 201 to 210 and 301 to 310 will have the same settings as above, except now the “**Master**” is set to 3 to indicate that it calls into the pod master telephone, configured as Master 3.

The following screens show the settings for Station 201 after the “**Name**” on Page 1 is changed to “Cell A201”, the “**Master**” on Page 1 is changed to “10” the “**Initial volume**” and “**Initial sensitivity**” on Page 2 are set to “3”, and the “**Call announce**” on Page 2 is set to “1”.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                           F1: Help.
Station ID:      201      Page 1 of 11
Name (English):  Cell A201
Name (French):   ?
Name (Spanish):  ?
Master:          10
ERQ timeout:     0      (seconds)
Pulse output length: 0      (.125 second increments)
LED flash on CRQ: 0      (0=Off 1=Flash 2=Solid)
Station group list:
Event priorities:
Output when done: 6      (1=0n 6=0ff)
Alternate ON list:
Alternate OFF list:
Interlock list:
Page amp station: 0      (for Page stations)
Addl Output list:
Monitor output on: 0      (0 = on, 1 = off)
Camera starts on: 0      (0 = Call, 1 = CRQ)
```

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                          F1: Help.
Station ID:      201                Page 2 of 11
Initial volume:  3                (0 to 9)
Initial sensitivity: 3          (0 to 9)
Input level:     0                (0=mic 1=Line) (for AIO)
Output level:   0                (0=mic 1=Line) (for AIO)
Auto PTT output: 0                (0=0ff, 1=0n) (for AIO)
Call announce:  1
Monitor announce: 0
Call acknowledge: 0                (0=0ff, 1=0n)
```

The remaining stations 202 to 310 are configured the same as station 201, except for their names.

Paging outputs are normally on AIO/AOB cards or PAB-401/TAB cards. Paging output stations are configured similar to intercom stations, other than they do not require a master number as they have no call button, so a “0” can be entered for the “**Master**” field. Or, you can put any value in the Master field and it will be ignored by the system.

Talkback outputs on TAB cards do use the “**Sensitivity**” value on Page 2, so initially set this to “3” for midrange and you can adjust from there when testing the system.

Paging outputs on AIO/AOB cards should also set the “**Output level**” to 1 on Page 2 to indicate that it is a line level output.

The software parameters for paging output stations 10001-10004, 20001, and 30001 will all be the same except for the “**Name**” field. Change these parameters now.

Pages 1 and 2 of the configuration for Station 10001 are shown below.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                          F1: Help.
Station ID:      10001                Page 1 of 11
Name (English):  Circulation 1
Name (French):   ?
Name (Spanish):  ?
Master:          0
ERQ timeout:    0                (seconds)
Pulse output length: 0          (.125 second increments)
LED flash on CRQ: 0            (0=0ff 1=Flash 2=Solid)
Station group list:
Event priorities:
Output when done: 6                (1=0n 6=0ff)
Alternate ON list:
Alternate OFF list:
Interlock list:
Page amp station: 0                (for Page stations)
Addl Output list:
Monitor output on: 0              (0 = on, 1 = off)
Camera starts on: 0                (0 = Call, 1 = CRQ)
```

## DXI Configuration Example

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                           F1: Help.
Station ID:      10001      Page 2 of 11
Initial volume:  3      (0 to 9)
Initial sensitivity: 3      (0 to 9)
Input level:     0      (0=Mic 1=Line) (for AI0)
Output level:   0      (0=Mic 1=Line) (for AI0)
Auto PTT output: 0      (0=0ff, 1=0n) (for AI0)
Call announce:   1
Monitor announce: 0
Call acknowledge: 0      (0=0ff, 1=0n)
```

Exit to the edit screens by pressing the “End” key.

### 2.2.3 Editing Page Zone information

Paging zones specify a group of outputs (stations, paging amplifier outputs, and possibly master speakers) to be called as a “Page zone”. A “Page zone” can have one station (output) in it, or it can in extreme cases have all stations in the facility in it.

To modify the page zone configuration, use the “Right arrow” key at the “Database to modify” screen to select “PageZone” and hit “Enter”.

There are no default page zones defined initially so you will see the following screen which indicates that there are currently no page zones defined.

```
/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                           F9:Delete F10: Add F1: Help.
Pagezone ID:      Database is empty
Name (English):   █
Name (French):
Name (Spanish):
Volume:           0
Music channel:    0
Call priority:    0
Masters in zone:
Stations in zone:
Call announce:    0
Disable ALA On:
Announce tone:    0
Announce duration: 0
```

The common parameters that are adjusted for Page zones are “Name”, “Stations in zone”, and “Call announce”. “Stations in zone” are a list of outputs that are in this page zone. These need to be previously configured as stations as in the above section, even if they will not be called individually as a station. The “Call announce” setting is set to “1” if you want a beep over the page zone at the start and end of the call, or “0” if you do not want a beep when connecting to this page zone.

Other lesser used features are “Announce tone” which can be set to 0 to 3 to use different beep tones for this page announcement, with “0” being the standard 1 kHz pure tone, “1” being a 2 kHz pure tone, “2” being a short “chime” tone, and “3” being a “buzzer” tone. The “Announce duration” is used to specify how long the tone should sound. Typically this duration is in milliseconds, with a value of “250” being  $\frac{1}{4}$  second long, “500” being  $\frac{1}{2}$  second long, “750” being  $\frac{3}{4}$

second long, “1000” being 1 second long, etc. A value of “0” here will use the system wide default length which is set in the next section, “Globals”.

For the example, starting with Page zone 1, use “F10” to add a new station, and create “**Pagezone ID**” 1 with the “**Name**” being “All Page”, the “**Stations in zone**” being a list containing “10001-10004,20001,30001”, and the “**Call announce**” setting set to 1 as below.

```

/ Enter: Next field.          : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                     F9:Delete  F10: Add  F1: Help.
Pagezone ID:      1
Name (English):   All Page
Name (French):    ?
Name (Spanish):   ?
Volume:          0
Music channel:    0
Call priority:    0
Masters in zone:
Stations in zone: 01-10004,20001,30001
Call announce:    1
Disable ALA On:   0
Announce tone:    0
Announce duration: 0

```

The other page zones 2-4 and 11-14 are created in the same fashion, using the “**Name**” and “**Stations in zone**” from the configuration charts, and setting the “**Call announce**” setting to “1”.

After entering all of the page zones, press the “End” key to exit to the “Database to modify” screen.

## 2.2.4 Editing Globals information

The last commonly modified information is the “Globals” screen. The “Globals” screen modifies system-wide parameters and defaults.

The settings that are commonly modified are the “**Announce duration**”, “**Call Req timeout**”, “**Timeout display**”, “**List display**”, and “**English enabled**” parameters. Many of these parameters used in the testing process will need to be changed for a typical working system.

The “**Announce duration**” is almost always changed to “250” so that the call start and end tones (when used) are 250 ms (¼ second) long.

The “**Call Req timeout**” and “**Timeout display**” parameters are two related settings. These control automatic forwarding of calls from a master to another “secondary” master when they are not answered within a certain period of time. In this example, if the pod master receives an intercom call on its queue from a cell intercom when the staff member is doing a walkthrough of the dayroom and is unable to answer quickly, the call can be forwarded to the central control masters. The “**Call Req timeout**” setting determines how many seconds a call will remain on the original master’s call queue before being forwarded. The “**Timeout display**” setting determines how the call should be forwarded when the intercom does time out. In almost all cases, this should be set to “5” (Cancel). What this does is that if the call on the original master times out, the call request remains on the original master’s queue, and the call request will also be put on the secondary master’s queue. Whichever master answers it will automatically “Cancel” it off the other master’s queue. The other common setting is “4” (Xfer), which will cancel it off the original master, and put the call request on the second master instead when the call times out. The other values of 1 through 3 are very seldom used.

“**List display**” is an option that allows the “ID only”, “Name only”, or “Both ID and name” of the intercom stations calling in to be displayed on the call queue of a master station with keypad and display. It should always set to “Both ID and name” for most purposes.

“**English enabled**”, “**French enabled**”, and “**Spanish enabled**” indicate whether the system will allow the master menus to be changed to English, French, or Spanish languages. Most facilities have English staff only, so setting English enabled to “1” while setting the others to “0” will prevent the staff members from inadvertently switching the master menu display to a language they do not understand.

The “Globals” screen after changing “**Announce duration**” to “250”, “**Call Req timeout**” to “60”, “**Timeout Display**” to “5”, “**List display**” to “**Both ID and name**”, and “**English enabled**” to “1” is shown below.

```

/ Enter: Next field.      : Previous field.      Home: Next page.
/ : Select.      PgDn/PgUp: Next/previous entry.  End: Quit.
                                           F1: Help.
Staff checkin T.O.: 0      (seconds)
Monitor rate: 0      (seconds)
Announce rate: 0      (seconds)
Announce duration: 250    (milliseconds)
Call Req timeout: 60     (seconds)
Stop CRQ timer on: 1     (1=Cancel 2=Ack)
Timeout display: 5      (1=Station 2=Master 3=Event 4=Xfer 5=Cancel)
List display: Both ID and name
Continuous logging: None
FAXS port: 0
Dialing by ID: 0      (0=Off 1=On)
# Alarm width: 3
English enabled: 1      (0=No 1=Yes)
French enabled: 0      (0=No 1=Yes)
Spanish enabled: 0      (0=No 1=Yes)
Master idle mode: 0      (Connect 0=If idle, 1=Always, 2=Never)
Sync keypresses: 0      (0=No 1=Yes)
Can disable stns: 0      (0=No 1=Yes)
Auto-cancel HH alms: 0   (0=No 1=Yes)
Tel Ring/Ans Mode: 0
Repeat Host CRQs: 0      (0=No 1=Yes)

```

The Globals screen is the last screen that is commonly edited. Exit out of Globals by pressing the “End” key.

## 2.2.5 Saving the software configuration file

At the “Database to modify” screen, and select the “Exit” option.

The system will prompt for the “Software cfg file name to save to”.

The default entry is the old file name (in this case, the factory default name of sw\_xlon). Enter the new file name to save this software file to, in this case “sw\_exam1” and then press “Enter”.

```
Software cfg file name to save to: sw_exam1
```

The system will now be in the “DXI Admin” set of menus. Press the “x” key to return to the main menu system.

Now the configuration files are created for the DXI system. It is recommended at this point to first turn off all computers in the system, then turn them all back on to restart using the new configuration files.

## 3 Setting up the DXI System

The next step is to set up the DXI system by wiring up the appropriate equipment to the computers.

Wiring the Ethernet networks should involve redundant computers having their Ethernet networks connected by crossover cables, and Exchange computers should be connected together on an Exchange Ethernet network.

Lonworks networks should involve the computers in an exchange being connected to all of the card cages in that exchange with the “Backplane” network port, and to all of the masters and external DIO cards in that exchange with the “Remote A” network port. There should be a termination resistor on each of these networks. Also, redundant computers should have their “Backplane” networks paralleled from computer A to computer B, and their “Remote A” ports also paralleled from computer A to computer B.

Wire up the card cage power supplies to the card cages, and insert the cards in the card cages as shown in the “Card Cages” configuration spreadsheet.

Turn on the card cages, making sure that the ACB card “+12V” and “-12V” lights both show green.

### 4 Install Head End Equipment using the “Swap Card” function

Once all of the cards are installed and powered up, you can use the Maintenance functions of the software to “swap in” the cards to assign them their configured functions.

Proceed by first going to the “Maintenance” set of menus. If you followed the steps above, you should still be in the main set of menus. To go to the “Maintenance” set of menus, press “m” then type in the maintenance password “maint” then press “Enter”.

To install cards into the software, you need to use the “Maintenance” functions, “Swap cards”. You can do this from the “Maintenance” menu by pressing “m”, then “w”.



You will then be prompted with the message “Card ID to replace?”

## DXI Configuration Example

```
Card ID to replace? 0 (0=Exit)
```

You will need to go through the cards in the configuration, type their number in at the “**Card ID to replace**” prompt, and follow the instructions given. This needs to be done for all cards in the system, including cards in the card cage as well as other cards such as masters with a keypad/display and external DIO cards.

To start, type in “101” then “Enter” to swap in the ACB card in the first card cage. Once you type “101” the system will show the information in the configuration about the card, including the name and the card type.

It will then ask you if you want to replace the card. If this is the correct card, type “y”. Otherwise, type “n”.

If you type “y” then it will prompt you to insert the card and press the “Service” pin (recessed button labelled “Service” on the card).

```
y/Y: Replace card. End: Exit without replacing.
```

```
Card ID: 101  
Name (English): ACB 101  
Name (French): ?  
Name (Spanish): ?  
Type: ACB_101
```

```
Replace? (y/n) y
```

```
Insert new card; hit service pin on card to identify it.  
To exit, hit any key.
```

```
Waiting for service pin message (any key to exit) ...
```

Now go to that card and press its “Service” button. Per this configuration (and the hint of the card number), this is in the first card cage, first slot. If the network connection is connected and is on the correct network port, you should see a message indicating that the service pin message was received and that the card type is correct.

## DXI Configuration Example

```
y/Y: Replace card. End: Exit without replacing.
Card ID: 101
Name (English): ACB 101
Name (French): ?
Name (Spanish): ?
Type: ACB_101
Replace? (y/n) y

Insert new card: hit service pin on card to identify it.
To exit, hit any key.

Service pin message received. Card type OK.
```

Shortly afterward it will prompt for the next card to swap in. Before entering the next number, wait until the Status 1 (network status indicator) light of the newly swapped in card is blinking to indicate that the card is operational, then enter the next card ID at the “Card ID to replace”. Repeat the process for all of the cards in the system, including Card 1 (the master station). When you have finished all of the cards, enter “0” at the “Card ID to replace” prompt.

The system will then prompt you for the hardware configuration file name to save.

```
Hardware cfg file name to save to: hw_exam1
```

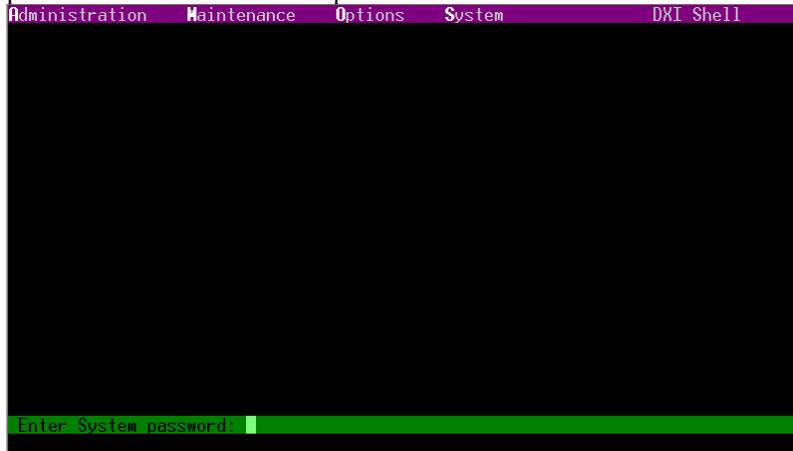
You can press “Enter” to accept the name already present, which should be your current configuration file.

Then you will return to the “Maintenance” set of menus, and your system should be operational and ready for testing.

## 5 Appendix 1: Assigning Ethernet “TCP/IP” addresses to computers

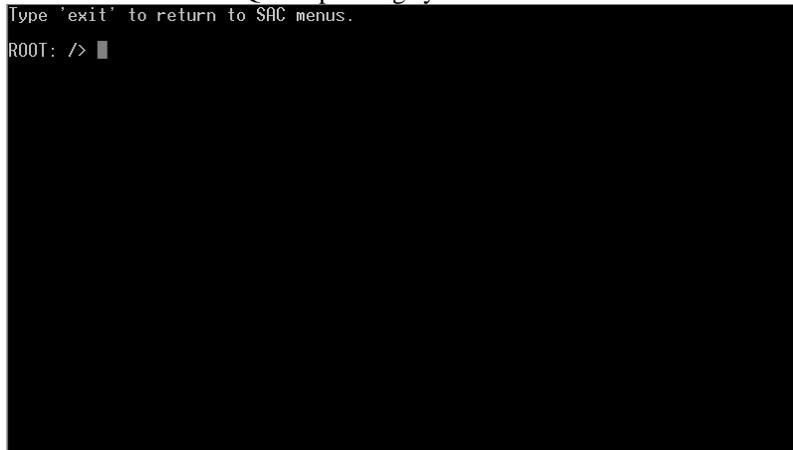
To change the Ethernet “TCP/IP” address of the computers, you can follow the procedure below.

First, you will need to go to the QNX operating system terminal (or shell). To do this, go to the main set of DXI menus (with “DXI Shell” in the top right corner). From this menu, press “s” (for system menus), which will result in a prompt for a password. Enter “dxi” for the password.



```
Administration Maintenance Options System DXI Shell
Enter System password: █
```

This will result in the QNX operating system shell screen with a “ROOT:” prompt.



```
Type 'exit' to return to SAC menus.
ROOT: /> █
```

Whenever you are in the QNX shell screen and wish to return back to the DXI menu systems, you can type “exit” and then press “Enter”.

In this case, we want to change the TCP/IP address. Type “tcp\_install” and then press “Enter” to do this. The system will then prompt for your new TCP/IP address. Type in the address and then press “Enter”.

## DXI Configuration Example

```
Type 'exit' to return to SFC menus.  
ROOT: /> tcp_install  
Enter Internet IP address for this PC: 192.168.2.200
```

Once this is done it will return to the QNX shell prompt. After changing the address, you will need to reboot the computer to make the change take effect. You can press the “Reset” button on the computer, or turn the computer on and off to do this. You can also reboot a computer by pressing and holding down “Left shift”, “Left control”, “Left alt”, and the “Delete” keys on the keyboard, or by typing “reboot” and then pressing “Enter” at the QNX shell prompt.