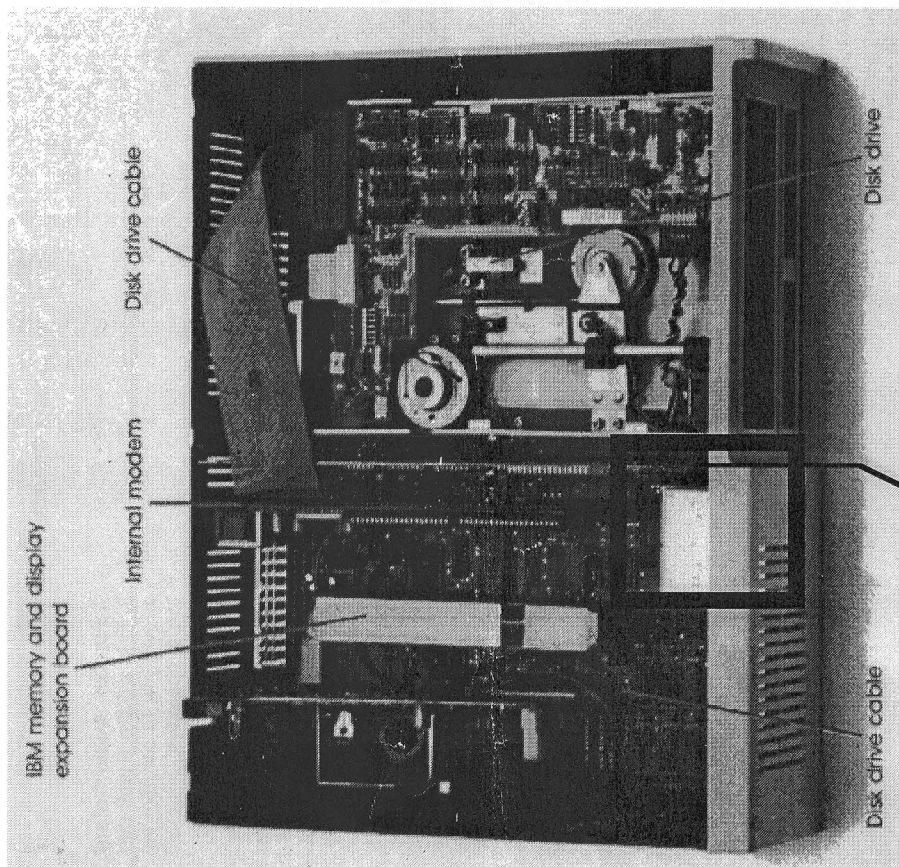


*Helpful Photos*  
for Installation of the Game-Master jrSidecar

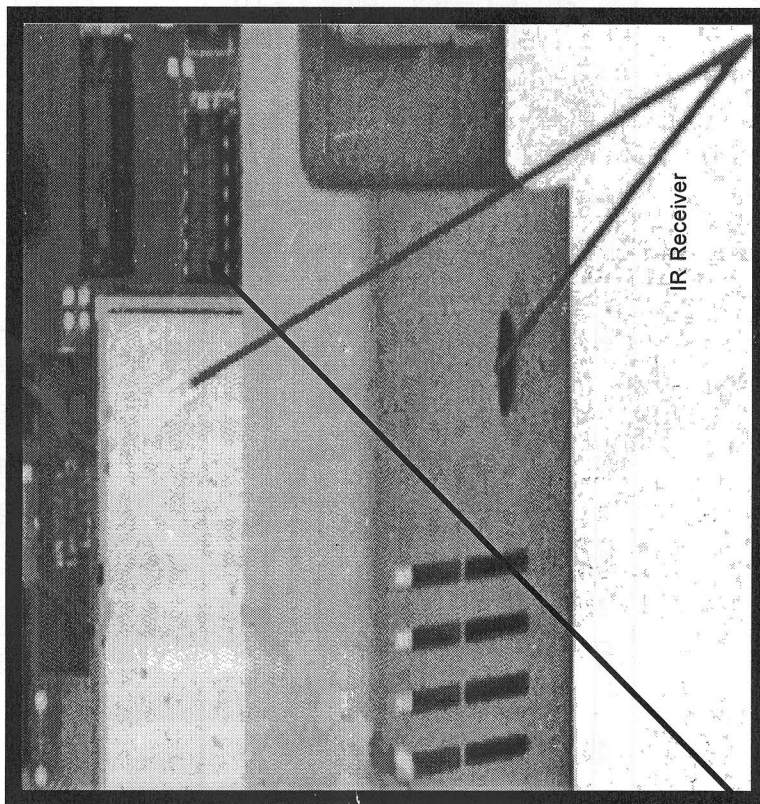
*Figure 1*



The arrow points to the 74LS258 that you must locate. Refer to Figure 2 for a magnified view.

Attach the cable that provides Tandy compatible video support to pin 10 of the 74LS258 as shown in this photo.

Note: Be careful here! There is another 74LS258 (not visible in this photo) that is in front of the 74LS258 shown in this photo.



*Figure 2*

**Mouse Controller Socket.**  
The controller module is included with the Game-Master's optional Mouse Option Kit (#10071)

**Socket for the Game-Master's optional Clock/Calendar Module.**  
To purchase this module order the PCE jirOM-Clock (#14301)

**J3**  
Memory upgrade connection point for kit #11206

**Socket for Game-Master's optional Memory Upgrade Module.** These modules permit you to upgrade your PCjr's memory to 736KB. Purchase PCE #11205 if you currently have 640KB and PCE #11206 if you have 512KB.

**Volume Control**

**Amplified Audio Output.**  
This is a 3.5mm jack that allows you to connect external speakers.

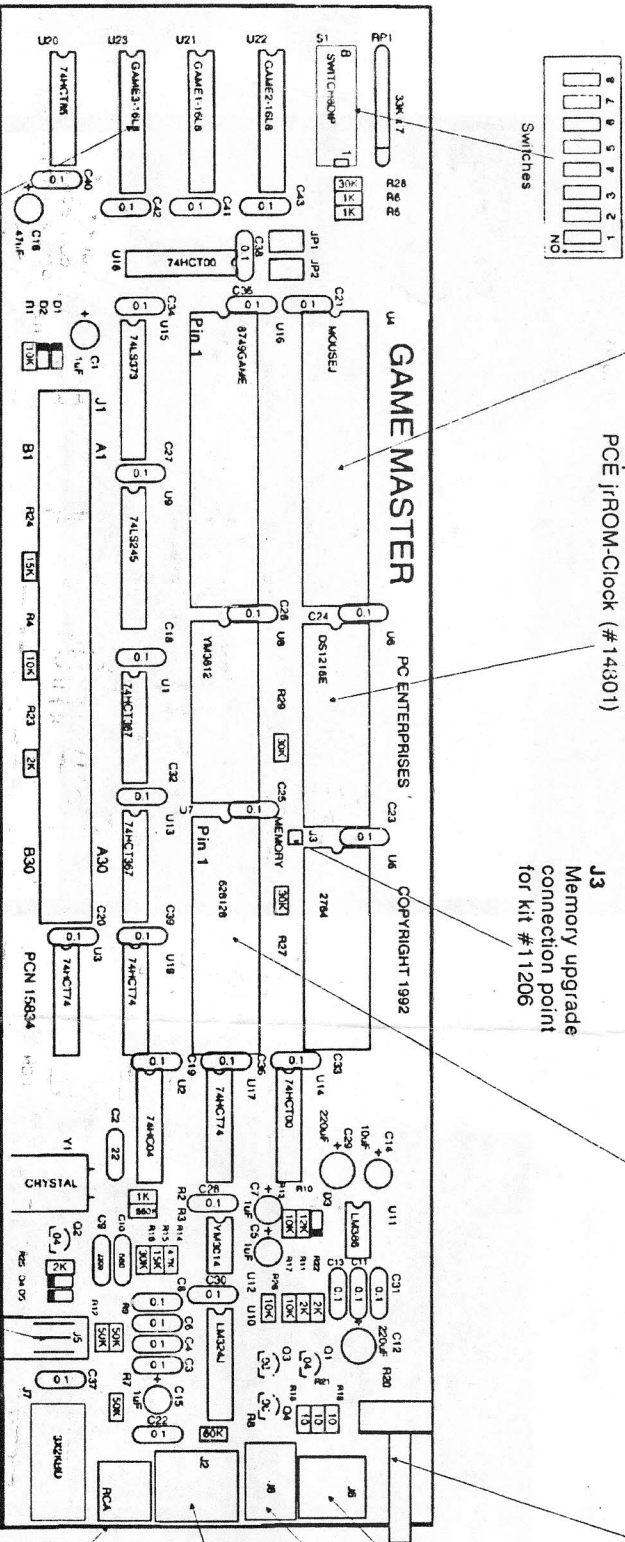
**Tandy Video Support Jack.**  
Use this 2.5mm jack and the cable provided with Game-Master to give you Tandy Graphics Capabilities.

**Mouse Connector.** Use this 9-pin mini DIN connector to install the optional PCE Game-Master Mouse

**Audio Input Jack for PCjr Sound.** This connector allows you to hear PCjr sound from external speakers connected to Game-Master. To use, connect to the PCjr A connector with an RCA cable available from PCE, Radio Shack, and numerous other suppliers.

**CD-ROM Audio Input.**  
Using this connector will allow you to hear CD-ROM audio from your optional Game-Master external speakers.

**Game-Master Decode Module.**  
When you purchase a Game-Master Memory Upgrade Kit you will need to replace this part with the new Decode Module provided with the Memory Upgrade Kit.



**Game-Master Sidecar  
Component View  
Figure 3**

**PC Enterprises'  
Game-Master Sidecar  
Installation and Operation Manual #80087**

## **INTRODUCTION**

The Game-Master is a sidecar that allows your PCjr to produce much better sound and graphics. In addition, the Game-Master also adds several other features to your PCjr.

### **AdLib and Sound Blaster compatible 11-voice FM sound**

Allows software to produce 11-voice AdLib or Sound Blaster compatible FM sound. The sound you hear can come from your existing PCjr speaker, or from external speakers that you install.

### **Amplified Speaker Output**

External speakers do not require amplification. This means you do not need to purchase expensive amplified speakers.

### **Tandy Graphics Adapter (TGA) compatibility**

TGA support allows most programs that display 16-color graphics on Tandy computers to run on your PCjr.

### **Optional Memory Expansion Kit**

Expands your PCjr to 736KB if you only have 512KB or 640KB currently installed.

### **Optional Mouse Kit**

Allows you to connect a Microsoft compatible bus mouse that does not use the PCjr's serial port.

### **Optional battery backed-up clock calendar**

Allows you to install a jrROM-Clock without disassembling your computer.

## **SETTING AND UNDERSTANDING GAME-MASTER SWITCHES**

Before installing the Game-Master sidecar on your PCjr, check the Game-Master switch settings to be sure it is properly configured for your system. The switches are located on the circuit board inside the sidecar case. The sidecar case is snapped together and can be opened by gently prying apart the two halves of the case.

The Game-Master has eight switches on the circuit board labelled "S1". Please refer to the markings on the switches when setting them. This document refers to these switches and their settings relative to markings directly on the switch.

Switch manufacturers often mark their switches differently. This manual refers to switch settings as "ON" and "OFF". If your switches are labeled "CLOSED" and "OPEN", "CLOSED" is the same as "ON" and "OPEN" is the same as "OFF".

| SWITCH | NAME       | PURPOSE  |
|--------|------------|--|
| 1      | RAM Select | ON enables the optional memory expansion<br>OFF memory expansion not installed (default) |
| 2      | ROM Select | ON enables the optional jrROM-Clock<br>OFF jrROM-Clock not installed (default)           |
| 3      | FM Sound   | ON enables the sound feature (default)<br>OFF sound feature not installed                |
| 4      | Reserved   | Always keep in the OFF position  |

Switches 5, 6, and 7 are used to set the address used by the optional jrROM-Clock (if installed). These switches are only significant when switch 2 (ROM Select) is in the "ON" position.

| SWITCH    |            |            | ROM         |
|-----------|------------|------------|-------------|
| 5         | 6          | 7          | ADDRESS     |
| ON        | ON         | ON         | C0h         |
| ON        | ON         | OFF        | C2h         |
| ON        | OFF        | ON         | C4h         |
| <b>ON</b> | <b>OFF</b> | <b>OFF</b> | <b>C6h*</b> |
| OFF       | ON         | ON         | C8h         |
| OFF       | ON         | OFF        | CAh         |
| OFF       | OFF        | ON         | CCh         |
| OFF       | OFF        | OFF        | CEh         |

\* This is the factory default setting. PC Enterprises recommends using this setting because the Game-Master jrROM-Clock option is designed so it can use the same setting as PCE SCSI hard drive systems. C600h (C6h) is the default setting for the PCE SCSI hard drive system.

|   |          |                                 |
|---|----------|---------------------------------|
| 8 | Reserved | Always keep in the OFF position |
|---|----------|---------------------------------|

## DETAILED SWITCH DESCRIPTIONS

### Switch 1 [RAM Select]

This switch enables and disables the Game-Master's optionally available on-board memory expansion. This switch enables computers which have either 512KB or 640KB of total RAM to expand to the maximum of 736KB. If you have not yet installed the Game-Master's memory expansion option, you must leave this switch in the OFF position! Failure to do so will result in lost data or unreliable operation of your computer.

The optionally available memory expansion will enable RAM to occupy the range between 640KB and 736KB (A0000-B7FFF) or between 512KB and 736KB (80000-B7FFF) without having to purchase another memory sidecar.

If your system counts up to 640KB before adding the Game-Master's memory expansion, order Catalog #11206.

If your system counts up to 512KB before adding the Game-Master's memory expansion, order Catalog #11205.

If you are using EGA or VGA graphics on your PCjr, you will not be able to use conventional memory above 640KB. The architecture of EGA and VGA does not permit conventional memory to be located above 640KB. The Game-Master is, currently, the only fast conventional memory product specifically designed to disable its memory above 640KB when the Display-Master (cartridge) is in use. Memory sidecars that provide memory above 640KB will interfere with EGA and VGA memory and cause memory failures and/or display adapter failures.

The PC Enterprises Display-Master is a product that gives the PCjr EGA and VGA capabilities. If you have a Display-Master, EGA or VGA capabilities are only available when the Display-Master cartridge is installed. In order to allow your system to use more than 640KB of memory with the Display-Master sidecar installed, you only need to remove the Display-Master cartridge.

### Switch 2 [ROM Select]

This switch enables or disables the Game-Master's optional jrROM-Clock. The jrROM-Clock is a product that allows the computer to keep accurate time and date while the computer is powered off. Previously the jrROM-Clock had to be installed only into a socket on the PCjr's system board, underneath the bottom diskette drive. The Game-Master allows PCjrs whose system boards do not have sockets to easily have a jrROM-Clock. Refer to switches 5, 6, and 7 for the address of the jrROM-Clock in the system's memory. Do not put this switch in the ON position if you do not have a jrROM-Clock installed in the Game-Master. If you do have a jrROM-Clock, but it is installed in the PCjr's system board, set this switch to OFF.



**Switch 3 [FM Sound]**

This switch enables and disables the 11-voice FM sound synthesis module. Always leave the switch in the ON position so the FM sound is always enabled. The Game-Master has not been tested with this feature disabled. If you need to disable this feature, PCE recommends that you remove the Game-Master rather than change the position of this switch.

**Switch 4 [Reserved]**

Always leave this switch in the OFF position. Setting it to the ON position may cause your computer to stop working.

**Switches 5, 6, and 7**

Used to select the ROM address that the jrROM-Clock uses when installed in the Game-Master. Use these switches to select a location that will not interfere with any other products which also occupy ROM addresses.

**PC Enterprises Hard Drive or CD-ROM drive users:**

An undocumented feature of the SCSI Host Adapter allows the jrROM-Clock to use the same address position as BIOS1 of the host adapter. Set switches 5, 6, and 7 to use the same address as BIOS1 (unless the BIOS1 address jumper (J5) of the SCSI host adapter has been intentionally changed, BIOS1 uses the C6h position).

**Switch 8 [Reserved]**

Always keep switch 8 in the OFF position. This switch is provided for internal test purposes only.

## **STEP-BY-STEP SIDECAR INSTALLATION INSTRUCTIONS**

Turn your IBM PCjr power off.

Turn off power to the computer and its accessories.

Remove the plastic side cover from the right side of the PCjr.

Caution: Serious shock hazards exist within the covers of the IBM PCjr. Do not open these covers unless you have unplugged your IBM PCjr power cord from the wall outlet. After turning your IBM PCjr power off, allow 5 minutes for cooling to take place before removing the top cover. Inspect the 60 pin connector and make sure none of the PCjr's pins are bent, damaged, or missing. You should see two rows of 30 pins. If any pins are bent or damaged, do not attempt to install the sidecar until you straighten the bent or damaged pins. You may do so with needle nosed pliers.

Position the Game-Master Sidecar so that the mating connector aligns with the 60 pin connector on the PCjr, then while holding the computer, push the Game-Master Sidecar in towards the computer until it is firmly seated.

Install the four stacking screws provided and tighten until they are snug. DO NOT OVER TIGHTEN! The purpose of these screws is simply to prevent the sidecar from falling off.

Re-attach the plastic side cover to the Game-Master sidecar.

## **GAME-MASTER CONNECTORS**

The Game-Master allows you to mix the audio (sound) signals from several audio devices. This allows you to operate your PCjr without needing a separate speaker for each device that produces sound. Only one speaker, or set of speakers, are needed to hear the sound produced from your PCjr sound 3-voice sound chip, Game-Master AdLib and Sound Blaster compatible sound, and your CD-ROM drive. Connectors J4 and J5 allow you to use the Game-Master's audio mixing circuit.

### **PCjr 3-voice Sound Input [J4]**

Use a standard RCA audio "patch" cable to connect the PCjr's "A" connector with the Game-Master sidecar. This RCA connector is designed to allow the PCjr's complex sound generator to also be played through the same channel as the Game-Master's 11-voice FM sound. All audio inputs on the Game-Master are automatically mixed with all other sound inputs as well as the Game-Master's FM sound synthesizer so they can be heard simultaneously through the Game-Master. Theoretically, any PCjr with the Game-Master can produce 15 independent sounds at once, but most programs will use a maximum of 11 independent sounds at any one time.

If you currently use a PCE Display-Master sidecar with an IBM PCjr Color Display, the Display-Master should already be plugged into the A connector. If you are using a PCjr Color Display with your Display-Master, leave the Display-Master plugged into the PCjr's "A" connector.

#### **CD-ROM Audio Input [J5]**

This is a 3 by 1 connector designed to accept audio output of a CD-ROM drive. All audio inputs on the Game-Master are automatically mixed with all other sound inputs as well as the Game-Master's FM sound synthesizer so they can be heard simultaneously through the Game-Master. This allows the 11-voice FM sound synthesizer on the Game-Master to continue to be heard while other sounds from the CD-ROM drive (such as special effects) are played.

Not all CD-ROM drives have audio capabilities so if you are considering adding a CD-ROM drive to your system, look for one which has audio capabilities and a compatible audio out jack. All CD-ROM drives sold by PC Enterprises have audio capabilities.

#### **Bus Mouse Connector [J2]**

Use this connector to attach the optional PC Enterprises Game-Master Mouse Kit. The Game-Master Mouse Kit can be ordered from PC Enterprises as Catalog #10071 and includes the mouse, proprietary mouse interface chip, and software. Although the mouse connector is always provided with the Game-Master, connecting any other mouse to the Game-Master does not work because the Mouse interface chip is also required.

#### **Tandy Modification Input [J8]**

Use the supplied cable to enable the Game-Master to provide TGA compatible screen modes for your PCjr.

NOTE: If you already have PC Enterprises' Five System Board Modifications, do not use this input to enable the Game-Master's TGA support. The Five System Board Modifications already provide this feature.

Plug the supplied cable in to the 2.5mm connector (J5) on the Game-Master, then connect the other end to pin 10 of the 74LS258 located on the PCjr's system board (near the IR receiver and cartridge slots).

The PCjr system board is the circuit board you see at the very bottom of your computer when you remove the system lid. To clearly see where to attach the cable on the system board, refer to Figure 2 and Figure 3. Figure 2 identifies the general area where the 74LS258 is located. Since there are more than one 74LS258s in that area of the computer, Figure 3 illustrates exactly which 74LS258 to use. Pin 10 of the 74LS258 is clearly identified in Figure 3. You may find it necessary to remove the



keyboard IR receiver by pulling straight up on it with a lot of force in order to gain easier access to pin 10.

### **Amplified Speaker Output [J6]**

Use this 3.5mm three conductor jack to connect speakers or headphones to your Game-Master. The Game-Master's built-in audio amplifier is capable of powering speakers such as the Realistic Mini Speaker System (Radio Shack Cat. No. 40-167).

If you plug in an external speaker to this connector, all of the Game-Master's audio output no longer gets directed to the PCjr's external speaker (i.e. PCjr Color Display speaker or Racore's Audio Amplifier with Speaker), but goes to the speaker plugged into the connector.

### **Output Volume Control**

The output volume control adjusts the volume level of all audio output that you hear from the Game-Master. This control will adjust the Game-Master's out regardless if it is being directed through the PCjr's external speaker or to speaker(s) plugged into the Game-Master's amplified output connector.

The volume control also has an off position. It can be found by turning the knob counter-clockwise until a click is heard. If you have an IBM PCjr Speech Attachment, turn this knob to the off position when you run software that will be using the Speech Attachment. The Game-Master will not interfere with the normal output of the IBM PCjr Speech Attachment only when the volume control is in the off position.

## **SOFTWARE**

Included with your Game-Master is PC Enterprises' TSOUND program. TSOUND is a program you can use to control the PCjr's sound subsystem.

If you would like to hear the Game-Master's AdLib and Sound Blaster compatible FM sound through the speaker in your PCjr's monitor, or any speaker connected to the PCjr's external speaker jack (the A connector), use the command:

### **TSOUND /E**

This command selects external audio input. If you do not use TSOUND to select the external input, you will only hear the PCjr's built-in sound capabilities through the PCjr's external speaker.

In order to learn more about the TSOUND program, refer to the TSOUND.DOC file.

## **GAME-MASTER OPTIONS**

### **Game-Master MOUSE KIT**

The Game-Master's Mouse Kit has numerous features that make it an excellent choice for any application that require a mouse. The Mouse Kit is available separately.

### **MOUSE KIT FEATURES**

The most important feature of the Game-Master Mouse is that it does not use a serial port. Instead, the mouse plugs into the Game-Master sidecar allowing the PCjr's serial port to be used for an external modem or other serial product.

#### **Microsoft Bus Mouse Compatibility**

Microsoft compatibility insures you'll have no trouble using the Game-Master Mouse Kit with most software. Microsoft compatibility also means the Game-Master Mouse works with Microsoft Mouse drivers provided with DOS 5.0 and later.

#### **Hardware Resolution: 360 Dots Per Inch (DPI)**

The mouse's mechanical design provides excellent hardware resolution. One inch of mouse movement produces 360 units of motion control.

#### **Hardware Dynamic Resolution**

Superior circuit design of the Game-Master's mouse provides higher hardware resolution when the mouse is moved quickly. As a result, the hardware resolution of the Game-Master's mouse automatically changes depending upon how fast or slowly you move the mouse. This feature is rarely found on low cost mouse products.

#### **Software Resolution: 60-1440 Dots Per Inch (DPI)**

The Game-Master's mouse software lets you adjust the resolution as low as 60 DPI for increased precision, or as high as 1440 DPI for extremely high speed. When used in the high resolution modes the Game-Master's mouse needs less desk space than conventional mouse products.

#### **High Tracking Speed**

500 mm/sec The tracking speed of a mouse product is very important. A faster tracking speed permits your computer to more accurately sense mouse movement. The Game-Master's mouse is much faster than many lower cost mouse products.

**Lightweight Ball**

The mouse's rubber-coated ball is exceptionally lightweight. This reduces fatigue and makes the mouse comfortable to handle even when working for a long time.

The Game-Master's mouse is designed specifically to work with the IBM PCjr. Please refer to the manual titled "jrBUS-Mouse Installation and Operation" for detailed information. The jrBUS-Mouse manual is provided with the Game-Master Mouse Upgrade Kit.

**Game-Master MEMORY EXPANSION KIT**

This kit allows PCjrs that have only 512KB or 640KB to expand conventional memory to 736KB using fast sidecar memory. Highly recommended for all 512KB or 640KB PCjrs. To order the Game-Master Memory Expansion Kit that increases memory from 512KB to 736KB order #11206. To order the memory expansion kit that increases memory from 640KB to 736KB order #11205. Both products are available from PC Enterprises.

**Game-Master jr-ROM Clock**

The Game-Master has a socket that allows you to install a PCE jrROM-Clock. If your PCjr does not already have a battery backed up clock/calendar device this product is highly recommended. To purchase the jr-ROM Clock option, order #14801 from PC Enterprises.