APC Inc.
Applied Personal Computing

MultiPlayer Game Server

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INTRODUCTION

Greetings once again and congratulations! You are now the proud operator of the world's first, best, and only BBS-independent high-speed communications network gaming server: the *APCi MultiPlayer Game Server*!

I'm Kevin Sawyer, President and CEO at Applied Personal Computing, Inc. based in O'Fallon, Illinois, USA. I would like to take these first few pages to thank you, *thank you*, for supporting us by licensing the *APCi MultiPlayer Game Server*. In return, we are committed to supporting you as you offer the very best multiplayer gaming platform to your on-line community. We believe that our willingness to provide unlimited support has been and will continue to be the foundation of our success. Allow me to explain...

It all started back in May of 1994 when we had the wild idea that our BBS users would enjoy playing id Software's *DOOM* in true network fashion using their modems to connect to our BBS. We were informed by several sources that "network" modem DOOM could not be accomplished. Nonetheless, we gathered the equipment needed to develop and test our ideas and had a working serial DOOM "network" within a week or so. With that encouraging experience, we decided to write an application that would be used by players to connect to our "server" via our BBS and play DOOM. We developed and distributed a simple "client" application and put the "server" on-line.

From the very first day, we put our toll-free phone number on our free "client" software and encouraged users to call us with any questions, comments, or complaints. Word quickly got out on the Internet that we had a BBS that supported four-player network DOOM! Within days, we had hundreds of FAXes, phone calls, and email inquiries. So, we decided to

develop our simple "client" software into a full-featured front-end utility that could facilitate all possible methods of network DOOM play. We uploaded the "client" software to a few common BBSs and Internet FTP sites. Then, it all started...we now know what it is like to have thousands of beta testers!

Due to the fact that our software was free, and that we offer a toll-free support line, anybody was willing to call us at anytime about anything. We spent all day and night helping DOOMers configure their modems, often guiding them as they disassembled their entire computer systems hoping to isolate interrupt conflicts. We called countless modem manufacturers to obtain correct initialization strings. If you played the earlier versions of DOOM, you may recall that there were several sound- and network-related difficulties. As a result, we spent almost as much time giving DOOM-related technical support as we did playing DOOM, and believe me, that's a lot of time!

The point is, since we were willing to provide free and unlimited support, we quickly received reports of any problems within our software as well as comments about possible improvements. These reports were invaluable in our rapid development process and ultimately made it possible for us to offer an extremely stable product that is easy for anybody to use. This same support, in conjunction with your success, will continue to be the element that keeps APCi on the cutting edge of on-line network gaming technology. Therefore, we anxiously await your calls with comments, questions, and even complaints.

We really are here to help you succeed. If you succeed, we should, too! And we have every reason to believe that you will. Here's why...

For several years, privately-owned on-line services—commonly referred to as Bulletin Board Systems, or BBSs—

● have provided personal computer users with easy access to a wide range of services including electronic mail, shared message databases, and file libraries. Recently, large commercial on-line services such as *America Online* and *CompuServe* have been captivating the on-line community, forcing many privately-owned services to either specialize or cease operation altogether. With the impending mass-exodus to the Internet, many believe that privately-owned services will quickly become extinct.

Not true! Consider this...

It is quite possible that in 1995, more personal computer systems will be purchased for home use than were sold for home use in all of the years since the personal computer was invented! At least half of these systems will ship with high-speed modems. It is also quite possible that 50% or more of

● the total time home users spend with their new systems will be for entertainment purposes. That's right, games! And the best games in the world are high-speed, multiplayer, multi-media, simulation/virtual reality network games! Now, if there was just some way that all of these users could dial-up a common location and play such games together in real time...

The Internet is not nearly fast enough to support synchronized data-intensive games like DOOM, and it won't be for many years. All of the commercial on-line services that are based primarily on X.25 packet-switching networks have the same problem. While they are all great file servers, they simply can't support the fast, smooth, and continuous inter-channel data communications as required to support real-time high-speed simulation/virtual reality network games. This is why you have a distinct advantage by running the

● ***APCi MultiPlayer Game Server*** as an integral part of your on-line service!

The advantages don't stop there. Of course, the players have a tremendous advantage because they can finally play

games in a truly unpredictable environment. It is for this same reason that developers have an advantage.

The most important element of writing a successful simulation/virtual reality game is, well, simulating reality! If the game doesn't look and feel extremely realistic, it will quickly fail in the marketplace. While graphics and sound are very important elements of realism, nothing is as important as the way the game reacts and "feels" to players. All computer-generated characters and situations must act and react intelligently with the player.

Creating simulated intelligence requires extremely complex algorithms which consume a considerable amount of processing power. If the algorithms are not just right, then the game will be either too predictable and therefore too easy, or it will be almost impossible. In either case, players quickly lose interest and sales of the game drop to a level that hardly pays for its distribution.

Now, imagine how much faster and easier it would be to write games if developers no longer had to rely on algorithms to control the most critical elements. Imagine how much better the graphics and sound would be using the additional processing power freed by removing such algorithms. The obvious answer: let real, live people do all the work by providing them with a platform on which to network their personal computers simply by calling centralized locations with their high-speed modems. The benefits don't stop here.

One of the largest expenses related to the software industry is distribution. However, if the primary market were to consist of consumers with high-speed modems, publishers could freely distribute limited shareware versions of games via Internet FTP sites as well as the on-line services hosting the games. Consumers could then download the software directly to their systems. Since the software is primarily multiplayer games, consumers will make copies to give to

their friends. If they decide to purchase the games, they could simply connect to a centralized automated system, enter their credit card numbers, and receive a registration code that would "unlock" the full functionality of their copy of the game! Simple serial number checking of registered versions when the games begin would reduce piracy, increasing sales volume and decreasing retail prices.

Other expenses that would be greatly reduced include advertising and technical support. All consumers in the network gaming market have dial-up access to common public message databases such as Internet newsgroups and FIDONet. Most of the technical difficulties experienced by any one user are invariably experienced by hundreds of others as well. By keeping users well-informed through on-line public announcements as well as comprehensive technical discussions, the expenses related to conventional support and advertising methods would be virtually eliminated. As a matter of fact, users will inherently give each other technical support in the interest of being able to play with each other. System operators supporting the network games will naturally be motivated to advertise new games as they are available in order to bolster user activity.

As development, publication, and distribution expenses are reduced, more developers will be able to afford to compete in the on-line gaming market. Lowered expenses combined with increased competition always results in higher quality products at lower prices. Everyone wins!

Players have more fun, developers write better games, games are cheaper, publishers make more money, support is painless, and best of all, privately-owned on-line services are finally profitable once again! All of this because of...well...the *APCi MultiPlayer Game Server*!

This is our vision, and we sincerely hope that you will share it with us. Whether you intend to operate the *APCi*

● ***MultiPlayer Game Server*** for fun, profit, or both, we wish you the best, and we're absolutely behind you 110%! Support us so we can support you. It's that simple!

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LICENSE AND SUPPORT AGREEMENT

Please review our licensing agreement. Following are the terms and conditions to which you agreed prior to placing your order for the **APCi MultiPlayer Game Server.**

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● TECHNICAL SUPPORT TERMS

Our support terms are very simple. They work like this:

If you will always promise to:

■ read and follow our documentation thoroughly,

■ read and respond to your email from us,

■ if remotely possible, read and participate in public message databases related to the *APCi MultiPlayer Game Server* and supported games,

■ read any technical information that we make publicly available,

■ be patient as we work through the inevitable problems that turn up in this industry,

■ and, most importantly, always be candid and totally honest with us,

Then we promise to provide you with:

■ fast, free, effective updates as needed,

■ comprehensive, continually updated documentation,

■ easy access to technical support and information via phone, FAX, the APCi BBS, Internet email, Internet newsgroups, and other public message databases,

■ straight answers to your questions as well as our honest opinions and friendly advice about anything and everything,

■ and our devoted effort to quickly support all of the best multiplayer games if at all possible.

GENERAL INFORMATION

The *APCi MultiPlayer Game Server* is an application that supports multiple concurrent connections by personal computer users for the purpose of engaging in high-speed network gaming. Players may connect to the APCiMPGS locally via IPX LAN and serial connections, or remotely via high-speed modems.

Players use freeware *APCi MultiPlayer Game Client* applications to connect to the APCiMPGS. Once connected, they may meet other players on-line, chat to agree upon games and configurations, form gaming groups, and participate in real-time interactive network gaming. All games are executed on and from the individual players' computer systems. Licensing of games is the sole responsibility of the players who install and execute them.

The *APCi MultiPlayer Game Server* may be licensed in four, eight, and sixteen-player configurations. The number of players in any one game may be limited by the game.

● SYSTEM REQUIREMENTS

The *APCi MultiPlayer Game Server* is a native DOS application that requires a dedicated IBM-compatible personal computer system with at least a 386 processor, one megabyte of main system RAM, a high-density 5.25" or 3.5" floppy diskette drive, and a CGA, EGA, or VGA video interface. MS-DOS 5.0 or later is recommended.

The *APCi MultiPlayer Game Server* also requires one or more of the following input/output interfaces: up to two standard serial communications ports (e.g. COM1 at 3F8 on IRQ4, COM2 at 2F8 on IRQ3), an intelligent multiport serial communications controller that supports the INT14h EBIOS interface (e.g. DigiBoard DigiChannel PC/16e), or an IPX-compatible network adapter with appropriate drivers.

The *APCi MultiPlayer Game Server* may not be executed under *Windows*, *OS/2*, *DesQview*, or any other multitasking operating environment. No other programs may execute while the APCiMPGS is in operation.

CONFIGURATION EXAMPLES

The *APCi MultiPlayer Game Server* may be configured for use in many different ways, either alone or in conjunction with any multinode BBS. Following are examples of several configurations of the APCiMPGS. Please read each configuration carefully and in order. The knowledge presented in each section will be presumed to be understood in subsequent sections.

Stand-Alone APCi MultiPlayer Game Server

The *APCi MultiPlayer Game Server* may be used as a stand-alone network gaming platform. However, it is important to understand that the APCiMPGS is not a BBS and has no accounting features whatsoever. There is no way to limit or control access to the APCiMPGS in this configuration. Users wishing to connect to the APCiMPGS must be using the most current freeware *APCi MultiPlayer Game Client* software. All APCiMPGCs will be available for download from BBSs and internet FTP sites.

Modem/Serial Connections

The APCiMPGS may accept user connections via the following standard serial communications ports:

Port	Base Address	Interrupt
COM1	3F8	4
COM2	2F8	3
COM3	3E8	4
COM4	2E8	3

Due to the fact that ports 1 and 3 share a system interrupt, as do ports 2 and 4, only two ports of this type may be configured without conflicts. Non-standard interrupts are not

supported. These ports may be represented by internal modems, although external modems are strongly recommended.

The APCiMPGS may also accept user connections via serial ports on intelligent (co-processed) multiport serial communications controllers which support the INT14h EBIOS interface (see Figure 1). The DigiBoard DigiChannel PC/Xe series is guaranteed to function properly with the APCiMPGS
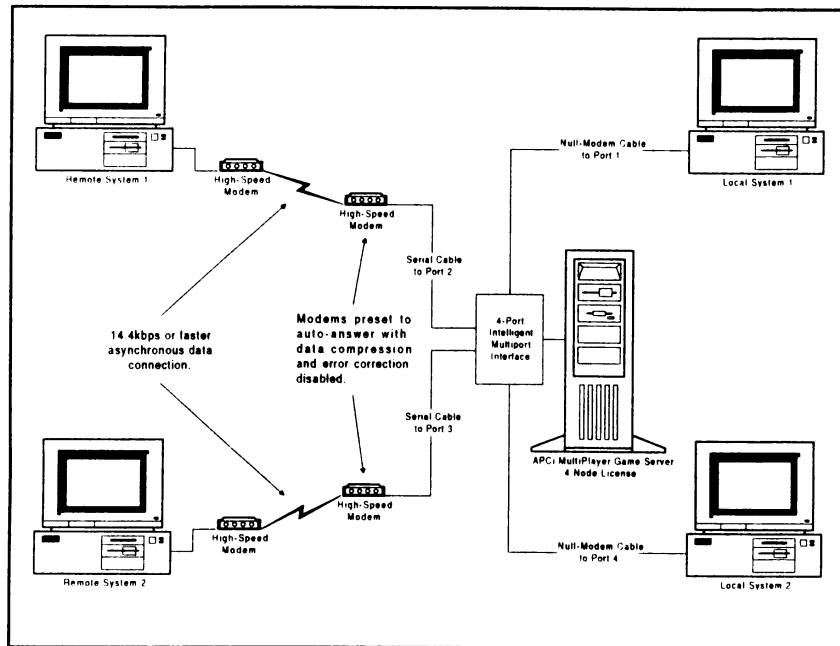
Figure 1

and is therefore the recommended controller.

Standard serial communications ports and INT14h EBIOS ports may be used simultaneously. Users may connect to them remotely via high-speed modems or locally via standard null-modem serial communications cables.

IPX Connections

The APCiMPGS may accept IPX connections via a local area network (*see Figure 2*). The APCiMPGS must have an IPX-compatible network adapter installed as well as all of the drivers needed to support IPX. Any NE2000- or NE2100-compatible 16-bit ethernet adapter is recommended. Users connecting in this fashion must also have IPX-compatible
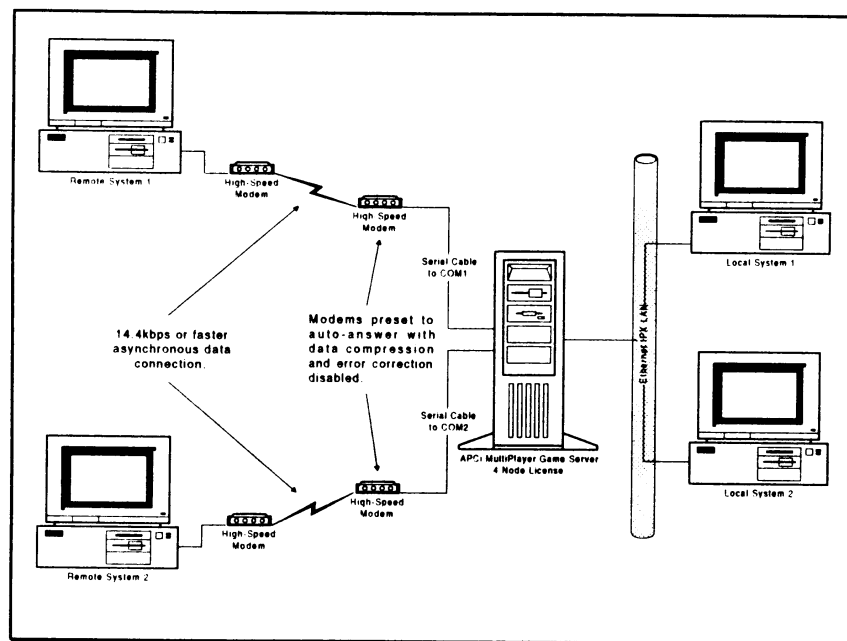
Figure 2

network adapters and drivers installed on their personal computers.

The APCiMPGS with a BBS

The *APCi MultiPlayer Game Server* may also be configured to operate in conjunction with any multinode BBS. Possible configurations are largely determined by the type of BBS

● hardware and software used. The APCiMPGS will connect to BBS hardware using the same methods as described and illustrated in the previous section.

To achieve fast, smooth on-line games, gaming data must be able to travel between the APCiMPGS and all connected users without the slightest interruption. BBS hardware and software must be completely transparent to gaming data. The best way to accomplish this goal is by isolating all BBS hardware from the gaming data path. Therefore, the APCiMPGS should exist between the users and BBS equipment.

APCiMPGS Preceding the BBS

● With the use of external modems, an intelligent multiport serial communications controller, and special "passthrough" cables designed by APCi, the APCiMPGS may be placed between the modems and the BBS hardware (see Figure 3).

In this configuration, the APCiMPGS is completely transparent to both the modems and the BBS until users trigger the BBS to actuate the APCiMPGS. Once the APCiMPGS has been actuated, it will appear to users that they have entered a standard BBS "door" program.

The APCiMPGS will keep the BBS active while users are playing and return them to the BBS when they are ready. The APCiMPGS will also monitor the BBS for a signal that the user has run out of time and is to be disconnected. Should a user disconnect while using the APCiMPGS, the BBS is instantly notified so that the node may be reset for the next call.

● *This configuration will yield the highest performance possible.* With this configuration, performance will be limited only by connect speed, phone line quality, and the speeds of individual users' machines.
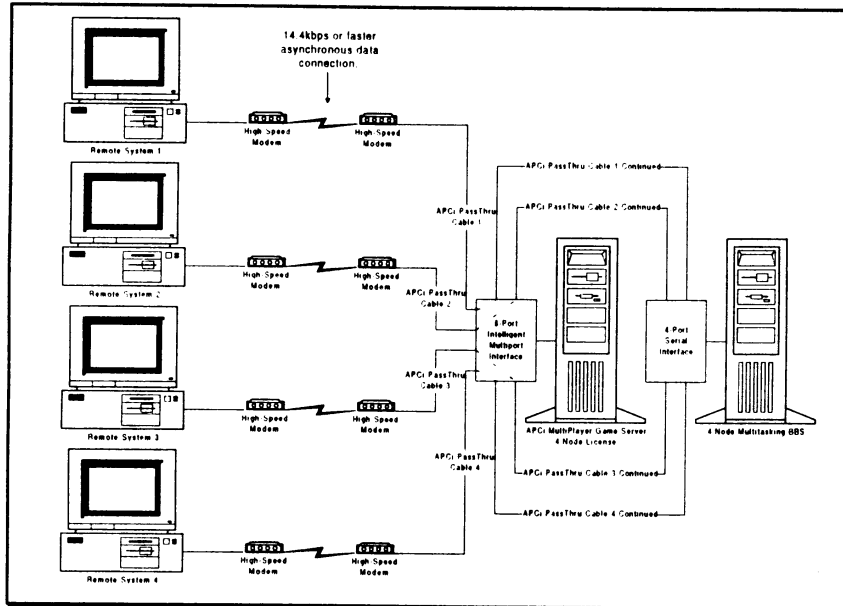
Figure 3

APCiMPGS Following the BBS

There are a few cases in which gaming data may pass cleanly through a BBS to the APCiMPGS. In particular, this may be accomplished when there exists one BBS node system per phone line. In this case, each BBS node system may be connected to the APCiMPGS via null-modem serial communications cables (*see Figure 4*) or IPX LAN connections.

In this configuration, each BBS node system will execute the *APCi Gateway Utility* as an external "door" program.

In a network exceeding four BBS node systems, it is strongly recommended that BBS node systems be connected via null-modem serial communications cables to an intelligent multiport adapter installed in the APCiMPGS system. Thus,

all gaming data will be isolated from networking data, ensuring the fastest, smoothest on-line gaming possible.

This configuration is not recommended for use with multitasked BBSs. The smooth and fast communications desired for on-line gaming can rarely be achieved under multitasked environments such as *Windows*, *OS/2*, and *DesQview*. The APCiMPGS should be placed between the external modems and the BBS in this configuration.
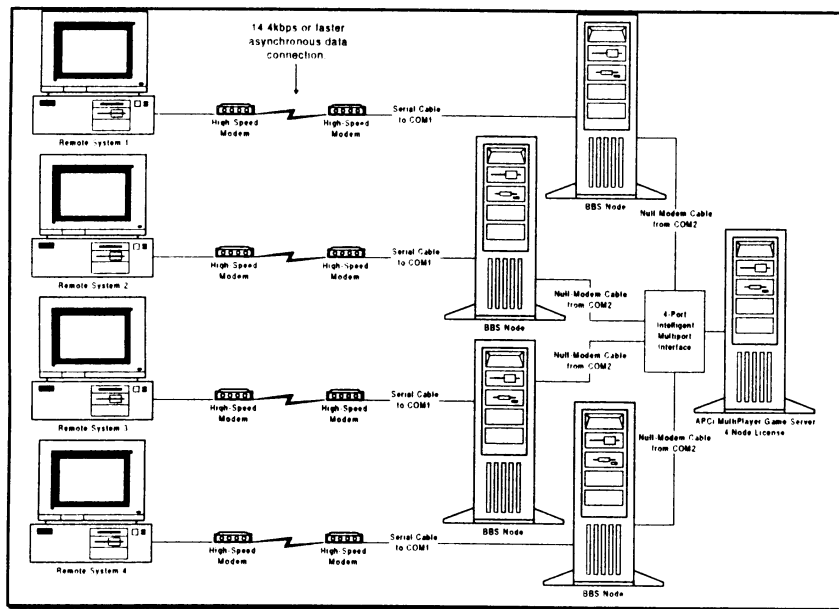
Figure 4

Internally multitasked BBSs such as Galacticomm's *Major BBS* and eSoft's *TBBS* are able to pass gaming data through serial "door" ports to the APCiMPGS. However, this configuration is also not recommended due to the latencies that are frequent on multitasked BBSs. The APCiMPGS should be placed between the external modems and the BBS in this configuration.

The Ultimate Example!

Figure 5 illustrates a 16-node APCiMPGS supporting local and remote users over every supported connection method. Each user is running the freeware *APCi MultiPlayer Game Client* software.

In the upper-left corner, four remote users are supported via high-speed modem connections to BBS A. BBS A has one
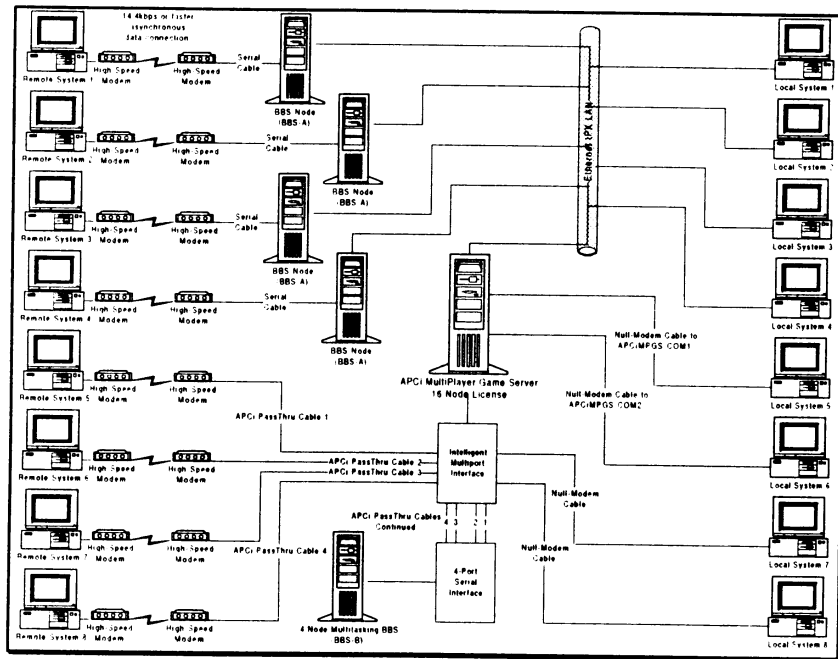
Figure 5

computer system per phone line. Each BBS node system uses an IPX-compatible ethernet network interface and executes the *APCi Gateway Utility* as a BBS "door" to send gaming data to the APCiMPGS via ethernet IPX LAN.

In the upper-right corner, four local users are connected to the APCiMPGS via the same ethernet IPX LAN segment.

In the lower-left corner, four remote users are supported via high-speed modem connections to BBS B. BBS B is multitasking four nodes on one computer system and is connected via custom **APCi PassThru Cables** to an intelligent multiport serial controller installed on the APCiMPGS. All data from these users is transparently passed through the APCiMPGS to the BBS until users select the appropriate option to use the APCiMPGS. The BBS then notifies the APCiMPGS to activate and intercept all user data. The APCiMPGS remains in this state until users either hang up or choose to return to the BBS, or until the BBS notifies the APCiMPGS that the user is out of time and is to be disconnected.

In the lower-right corner, two local users are connected via null-modem serial cables to the two standard serial communications ports on the APCiMPGS. Two more local users are connected to the APCiMPGS via null-modem serial cables to the same multiport serial communications controller that services the users on BBS B.

All of these users may seamlessly engage one another in the fastest and smoothest on-line network gaming in the world!

● HARDWARE SETUP

After you have identified a configuration that will meet your needs, you need to set up a computer system on which to execute the *APCi MultiPlayer Game Server* software.

IPX Connections

If you will be making IPX connections to the APCiMPGS, you will need to install an IPX-compatible network interface. The exact interface may depend upon your existing network, if any. If you do not already have networking interfaces, we recommend any NE2000- or NE2100-compatible 10Mbps ethernet interface. Follow the manufacturer's guide for installation and configuration. Be sure to avoid conflicts with other components. As you install other interfaces, keep a listing of all system interrupts, memory addresses, and I/O port addresses.

Modem/Serial Connections

If you will be making serial connections to the APCiMPGS, you will need to install the necessary serial communications controllers. Remember that you may only have up to two standard serial ports. Additional ports require intelligent multiport serial communications controllers such as the DigiBoard DigiChannel PC/16e. In either case, follow the manufacturer's guide for installation and configuration.

If you will be using the APCiMPGS without a BBS, all you will require is standard modem cables to connect your modems to your serial communications ports. The modem end of the cable should be a DB25 male connector. The other end of the cable should be a DB25 female connector if you are using

a DigiBoard or a DB9 as needed for some standard serial ports.

If you will be using the APCiMPGS in conjunction with a BBS as illustrated in *Figure 4* in the previous section, you will need standard null-modem serial cables. The pin configurations will be dependent upon your BBS configuration. In this configuration, you must also execute the *APCi Gateway Utility* as a serial door program. This is the application that will intercept a user's communications data and route it to the APCiMPGS via a second communications port or an IPX LAN connection. Please refer to the **SUPPORT UTILITIES** section within this manual for details.

If you will be using the APCiMPGS in conjunction with a BBS as illustrated in *Figure 3* of the previous section, you will need an intelligent multiport serial communications controller with two ports for each modem and one *APCi PassThru Cable* for each modem (all modems must be external).

APCi PassThru Cables

The *APCi PassThru Cable* has four standard DB25 connectors; one male, and three female. It is a total of 13 feet in length, with one foot of cable existing between the two middle connectors. It is extremely important that all cables be installed correctly. Before you begin installation, number your modems, serial channels, and BBS ports and make a chart that will allow you to keep track of all connections.

Start by plugging the male connector of the *APCi PassThru Cable* into the DB25 female connector on the back of your external modem. The next connector in the cable is the "MPGS-In" connector. It should be plugged into the first available channel of the intelligent multiport serial communications controller installed on the APCiMPGS system. The next connector in the cable is the "MPGS-Out" connector. It should be plugged into a channel next to the

● "MPGS-In" connector. The last connector should be plugged into the first available port of your BBS. Proceed in this manner until all modems are connected to the APCiMPGS and the BBS.

If you experience any difficulties, we're here to help!

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● SOFTWARE INSTALLATION

The following installation procedure assumes that you are familiar with basic MS-DOS commands such as **FORMAT** and **COPY**, and that you know the drive letter(s) that correspond to your floppy diskette drive(s). If you need assistance, please refer to an MS-DOS reference guide or type **HELP** at an MS-DOS command prompt.

The *APCi MultiPlayer Game Server* is distributed on one 3.5" 1.44 megabyte floppy diskette. While it may be possible to execute the APCiMPGS from the original distribution diskette, it is strongly recommended that you install it to a new diskette. Follow this procedure carefully:

Format a new high-density diskette to be used in the boot drive of your APCiMPGS system. Use the following command:

> **FORMAT** *[drive]***:** **/U** **/S**

Next, copy the contents of the original APCiMPGS distribution diskette to the newly formatted "install-copy" diskette. Do NOT use the DOS **DISKCOPY** command. You should use **COPY** or **XCOPY** instead.

When the copy procedure is complete, insert the original APCiMPGS distribution diskette and type the following:

> **APCIMOVE** *[drive1]***:** *[drive2]***:**

where *[drive1]* is the letter that represents your high-density 3.5" floppy diskette drive and *[drive2]* is the letter of the drive which was used to format the "install-copy" diskette. This process will transfer the execution authorization (copy protection) from the original APCiMPGS diskette to the "install-copy" diskette.

● NOTE: Attempting to copy either the original APCiMPGS distribution diskette or the "install-copy" diskette will result in an inoperable and useless copy. Therefore, your original APCiMPGS distribution diskette will be your only backup. Do not use it, and keep it in a safe location such as a bank deposit box.

Do not destroy the "install-copy" diskette without first returning the execution authorization to the original APCiMPGS diskette by running the APCIMOVE utility from the "install-copy" disk! Do not run a diskette compression, repair, or defragmenting utility on an authorized diskette. Doing so may damage your authorization!

● If you will be using an IPX-compatible network card as an input/output interface on the APCiMPGS system, you will now need to copy all of the necessary network drivers to the "install-copy" diskette. Network drivers are distributed with network operating systems such as Novell NetWare. For example: if you are using a NE2000-compatible ethernet network interface you will need to copy the following Novell NetWare client files to the "install-copy" diskette:

> **LSL.COM**
> **NE2000.COM**
> **IPXODI.COM**
> **NET.CFG**

The **NET.CFG** file must contain the necessary configuration information or your drivers will not bind to your network interface. Refer to your network operating system documentation for details.

● If you will be using an INT14h EBIOS-compatible intelligent multiport serial communications controller, you will need to copy the necessary EBIOS drivers to the "install-copy" diskette. For example: if you are using a DigiBoard

DigiChannel PC/16e, you will need to copy the following files to the "install-copy" diskette:

XIDOSCFG.EXE
XIDOS5.PGM

In this example, you will then need to execute **XIDOSCFG.EXE** to configure your DigiBoard. Follow the installation guide provided with your DigiBoard. Printed below is an example of a recommended DigiBoard DigiChannel PC/16e configuration as seen from within the **XIDOSCFG** utility:

DigiCHANNEL CONFIGURATION PARAMETERS

Board #	Type	Window Size	Memory Window	I/O Port	IRQ #	# Brd Chnls	Start Chnl#	Driver Support
1	PC/Xe	64k	E0000h	0100	15	16	1	DOS/EBIOS

Some parameters may vary depending upon DigiBoard model and system configuration. However, it is important that the Starting Channel Number be set to one (1) and that the Driver Support be set to DOS/EBIOS. The APCiMPGS will not function properly without these settings. The APCiMPGS will override all Channel Parameters such as baud, mode, RX flow, and TX flow. When you have completed the configuration utility, the utility will create a device driver file called **XIDOS5.SYS**.

Use a text editor to create a **CONFIG.SYS** file and an **AUTOEXEC.BAT** file on your "install-copy" diskette. If you are using a DigiBoard, your **CONFIG.SYS** file should contain the following line:

DEVICE=XIDOS5.SYS

If you are using an NE2000-compatible ethernet network interface, your **AUTOEXEC.BAT** file should contain the following lines:

```
@ECHO OFF
PATH=A:\
LSL.COM
NE2000.COM
IPXODI.COM
```

You may require different or additional drivers depending upon your particular choice of hardware configuration.

You are now ready to configure the APCiMPGS software for the system on which it will execute.

SOFTWARE CONFIGURATION

If your hardware setup is complete and your operating diskette has been properly prepared, you should be ready to configure your *APCi MultiPlayer Game Server* software. If you have not completed these steps, reading this section now is pointless. This section is strictly a step-by-step guide intended to be followed as you are able to view the accompanying configuration displays.

Insert the "install-copy" diskette into the high-density boot drive of the APCiMPGS system. Power on the APCiMPGS system.

At the **A:\>** MS-DOS command prompt, type **SETUP**.

SETUP will automatically create a fresh initialization file named **APCIMPGS.INI** in the root directory of the "install-copy" diskette.

Proceed immediately to the HELP menu by pressing <ALT>-H and use your arrow keys or press the H key to select HELP. Familiarize yourself with all HELP topics for future reference.

Configuring APCiMPGS Nodes

When you have completed browsing HELP, proceed to the MPGS menu and select CONFIGURE NODES. The first node, Node 0, has been selected for you.

Press <TAB> to change to the Node Type box and use your arrow keys to select a node type for Node 0. The possible node types are IPX LAN, DIGIBOARD, STANDARD SERIAL, and DISABLED/UNINSTALLED.

If Node 0 is configured as an IPX LAN or DISABLED/UNINSTALLED node, no other configuration options

● need be selected for Node 0. Press <SHIFT>-<TAB> to return to the node list and use your arrow keys to select the next node.

DigiBoard Nodes

If Node 0 is configured as a DigiBoard node, you will need to press <TAB> to proceed to the DigiBoard Options box. Use your arrow keys to select the DigiBoard Channel Number (port) that is to correspond with Node 0. Then press <TAB> to proceed to the Baud Rate field.

● The baud rate of each port should be set to 19,200bps if the port is connected to 14,400-19,200bps modem, or 38,400bps if the port is connected to a modem capable of raw connect speeds (no compression) in excess of 19,200. Basically, you should match your port (DTE) speed to your modem (DCE) speed as closely as possible without going below it.

If this Node/DigiBoard Channel is connected to an external modem via an *APCi PassThru Cable*, press <TAB> again to proceed to the PassThru To field. Select the DigiBoard Channel Number which will be connected to the same *APCi PassThru Cable* which will then be connected to the BBS. If this channel is not a passthru channel, select NONE. The list of available channels will not include channels which have already been otherwise configured.

Standard Serial Port Nodes

● If Node 0 is configured as a Standard Serial node, press <TAB> to proceed to the Serial Options box. Use your arrow keys to select the appropriate COM Port number. Only standard COM Ports with standard interrupts are supported (e.g. COM1 at 3F8 on IRQ4, etc.). Press <TAB> to proceed to the Baud Rate field and use your arrow keys to select the appropriate baud rate. Press <TAB> to proceed to the Edit

● TEXT BLOCKS button. Press <ENTER> to view/edit text blocks for this node.

Text Blocks

Text blocks are simply the plain ASCII text which users will view when they connect to the *APCi MultiPlayer Game Server*. Each node has five text blocks, all of which may be customized. Each text block must be less than one kilobyte (1024 bytes) in size.

When users initially connect to the APCiMPGS, they will be presented with the WELCOME text block. The default filename for the WELCOME text block is **WELCOME.MSG**. You may view and customize this text block by pressing <TAB> to highlight the EDIT FILE button followed by pressing <ENTER>. A very simple ASCII text editor window will appear for your convenience. When you are finished, press <ALT>-S to save your changes or <ALT>-C to cancel your changes and return to the list of text blocks.

When users select "?" while connected to the APCiMPGS, they will be presented with the HELP text block. Pressing "S" while connected to the APCiMPGS will display the STATUS HEADER text block, followed by the status of all nodes, followed by the STATUS FOOTER text block. Pressing "X" while connected to the APCiMPGS will display the EXIT text block and immediately disconnect users from the APCiMPGS. Press <ALT>-S to save any changes to the text block filenames and return to the CONFIGURE NODES display.

The APCiMPGS nodes are labeled in hexidecimal notation. Therefore, the first node is Node 0, the tenth node is Node 9, and the last (sixteenth) node is Node F. The node display indictates the node type (DigiBoard, IPX, or Standard Serial), channel/port number (if applicable), baud rate (if applicable), and passthrough channel (if applicable).

Modem Initialization Strings (Optional)

In the event that a DigiBoard Channel or Standard Serial port is connected to a modem and is NOT connected to a BBS, you may enter the appropriate modem initialization string which will enable the modem to automatically answer any incoming calls. Please check your modem documentation for details. All initialization strings should begin with the following commands: AT&F &C1 &D2 S0=1. You should consider disabling error correction, data compression, and flow control in this configuration.

Adding More Nodes

Proceed as described above until all desired nodes have been configured, up to the maximum number of nodes permitted by your APCiMPGS user license. Configuring more nodes than permitted by your license will disable the APCiMPGS altogether, and you will need to start over.

Starting Over

If you configure your APCiMPGS improperly and wish to start a clean setup process, simply delete the **APCIMPGS.INI** file from the root directory of the "install-copy" diskette and run **SETUP** again.

Saving Changes

When you have completed your node configuration, press <ALT>-O to save your changes and return to the APCiMPGS menus.

Setting APCiMPGS Timeout Values

Timeout values are used to reset the system in the event that users disconnect abnormally. They also control the behavior

of the APCiMPGS so that it may be synchronized properly with BBSs.

Under normal circumstances, most of these values should never be modified. You may always return the values to their defaults by pressing <ALT>-D and confirming the reset.

Long Timeout

The Long Timeout determines how long the APCiMPGS will wait before killing a supposed "live" channel that has not received data within the specified timeout period. This value should only be increased if players are frequently unable to load their games and begin transmitting network data within the allotted time.

Short Timeout

The Short Timeout determines how long the APCiMPGS will wait before killing a supposed "live" channel that stopped receiving data within a critical phase such as synchronizing with other players. This value should not be changed accept as instructed by APCi technical support representatives.

Reset Time

The Reset Time is an internal tracking timer that should never be changed accept as instructed by APCi technical support representatives.

Disconnect Time

The Disconnect Time is used to control the DTR signal of a DigiBoard or Serial connection to the MPGS. When a user disconnects, the MPGS will lower the DTR line for the number of seconds specified. This setting has no effect on passthrough nodes.

● Configuring the APCiMPGS software may seem complicated at first. Be patient, read everything on your display, and follow the directions carefully. After that, you know who to call if you have problems or questions.

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OPERATION

To begin operation of the *APCi MultiPlayer Game Server*, type **APCIMPGS** at the **A:>** MS-DOS command prompt. You may wish to add this command to the end of your **AUTOEXEC.BAT** file after you have tested it and know that you have the proper configuration. When the APCiMPGS is executed, it will read the parameters found in the **APCIMPGS.INI** file and initialize all serial and IPX LAN nodes accordingly. Once started, the APCIMPGS does not require any additional operator intervention.

The APCiMPGS Display

In the upper right corner of the display is a timer indicating how long the APCiMPGS system has been operational. Immediately below the "system up time" the license node count is displayed.

If any IPX nodes have been properly configured, the IPX LAN address of the APCiMPGS system will appear in the lower left corner of the display.

Against the left margin and below the header information all licensed nodes are displayed as well as their current status.

Possible node states are as follows:

- **BBS Passthrough**: the node is actively passing data from an external modem on one port to the BBS which is connected to another port. An *APCi PassThru Cable* is in use at this time.

- **Connecting**: the node has received the activation sequence from the BBS and is waiting to receive the activation password from the BBS.

■ <u>Idle</u>: the node is ready but is not currently servicing game or BBS data. If the node is a passthrough node, this state will indicate that a user has logged onto the APCiMPGS but has not yet joined a pool.

■ <u>Synching with other players</u>: a user is connected to the node and is being synchronized with other players into a chat or game pool.

■ <u>[username] using/playing [program]</u>: the user on this node is actively sending and receiving data to and from other users.

■ <u>Disconnecting</u>: a user is presently disconnecting from this node, or the BBS has requested that the DTR signal be dropped.

■ <u>Loopback Diagnostic</u>: a user is running the *APCi Loopback Diagnostic* utility on this node. The *APCi Loopback Diagnostic* utility is part of the *APCi MultiPlayer Game Client* software.

■ <u>IPX LAN Address</u>: if the node is properly configured to be an IPX LAN node, the IPX LAN address of a connected user will be displayed immediately following all other node status information.

Pressing the <SPACE-BAR> will display a list of options. The K key will "kill" the execution of the APCiMPGS and return the system to an MS-DOS prompt. If this is done while nodes are in Passthrough mode, all modems will be disconnected from the BBS! Pressing the corresponding node number/letter will reset the node to it's default state. Doing so while a user is on the node will disconnect them from the APCiMPGS system, which will improperly end any network game involving that user.

Believe it or not, that's it! Once it is in operation, it should be there to stay! Questions or problems? Go ahead, give us a call!

SUPPORT UTILITIES

Two diskettes distributed with the *APCi MultiPlayer Game Server* contain helpful utilities that are essential for proper setup and operation of the APCiMPGS. You will also find helpful sample configuration files on the APCiMPGS Utility diskette.

APCi MultiPlayer Game Client Software

The *APCi MultiPlayer Game Client* software is the freeware application that users must use to play games via the *APCi MultiPlayer Game Server*. Where possible, these applications will also act as full front-ends for the games being played. All documentation for this application is located under the HELP menu or in text files within the official archive.

APCi Gateway Utility

The *APCi Gateway Utility* is the application that runs as a standard BBS "door" program when the APCiMPGS is used in conjunction with a BBS as illustrated in *Figure 4* of the CONFIGURATION EXAMPLES section of this manual. It is located on the APCiMPGS Utility diskette in the GATEWAY directory.

The *APCi Gateway Utility* must be configured manually to receive user data from a specified serial communications port, and to transmit user data to the APCiMPGS via an additional serial communications port or an IPX LAN connection.

Using the text editor of your choice, you must edit the `APCIGATE.INI` file as needed for your specific BBS configuration. The initialization file may seem confusing due

to the fact that it contains all of the options necessary to remain BBS-independent.

All BBSs with "door" capability create some sort of "drop" file that is used by the external "door" application to identify the user's name, port status, time remaining on-line, and other information. Most "door" programs look for a file named **DOOR.SYS** which contains this information. However, you may configure the *APCi Gateway Utility* to work with almost any "drop" file by modifying the **APCIGATE.INI** file. You specify your BBS's "drop" file on the command line when you run **APCIGATE.EXE**. For example:

APCIGATE \WILDCAT\WCNODE1\DOOR.SYS

APCIGATE.INI

The **APCIGATE.INI** file contains the following entries and configurable variables:

EXIT=[string]

The EXIT option specifies a string for the Gateway to watch for to end the user's session on the MPGS. Since there is no carrier detect signal on IPX LAN connections, the Gateway has no other way to know if a user has requested to be returned to the BBS. Set this option equal to the last line of text in your exit text block on the MPGS.

FAST=[0|1]

The FAST option controls how the Gateway utility will refresh the local status display. Setting this option to 1 will use fast screen updating. Setting this option to 0 will use slow updating. Slow updating will reduce the load on slower BBS systems, or systems with slow video cards. If the Gateway is losing data on any BBS node, change this setting to 0.

LIGHTS=[0|1]

Determines the default setting of the on-screen modem lights display. Setting this option to 1 will display the modem lights when APCiGATE starts, 0 will hide them. The recommended value is 0. This feature is helpful when using internal modems to monitor the connection status. Using this feature may decrease the performance of APCiGATE when used on slower computers.

DISPLAY=[0|1]

Determines the default time display show when APCiGATE loads. Using a value of 0 will display the time the user has spent using APCiGATE. Using 1 will display the time the user has remaining.

RELAXED=[number]

Controls how the *APCi Gateway Utility* will "ping" the MPGS. Using a value of 0 will disable relaxed pinging and is recommended for serial connections. If you are using an IPX network to communicate with the MPGS, change this setting to 2000 if you have problems connecting to the MPGS.

CHECKMPGS=[0|1]

If using relaxed pinging does not allow you to connect to the MPGS over an IPX LAN, you can disable pinging altogether. Using a value of 0 will turn off pinging. NOTE: When pinging is disabled, the initial welcome screen from the APCiMPGS will not be automatically displayed. The user will have to press their spacebar to activate the MPGS.

● **CARRIER=[0I1]**

Used to disable carrier detection in the *APCi Gateway Utility*. Leave this value set to 1.

HANDSHAKING=[0I1]

Determines if APCiGATE will enforce the modem's handshaking signal. This option is not needed over IPX LAN connections. The recommended value is 0.

The following entries describe your BBS's "drop" file to the *APCi Gateway Utility.*

● **NAMELINE=[number]**

The NAMELINE option should be set to the line number that the user's name is on in your "drop" file.

TIMELINE=[number]

The TIMELINE option should be set to the line number that the user's time remaining on-line (in seconds) is on in your "drop" file.

COMLINE=[number]

The COMLINE option should be set to the line number that the user's COM port is on in your "drop" file. You may also use the user's node number.

● The following entries describe the port connections used by your BBS and how they are to be connected to the MPGS. There can be as many entries in this section as you need.

● The entries are dependent upon the contents of the COMLINE in your "drop" file.

LINK_[comline]=[port1] TO [port2]

The LINK entry controls how the Gateway will connect nodes together to move data between the BBS and the MPGS. The [comline] parameter is the contents of the COMLINE in the "drop" file. For example, in DOOR.SYS, the COMLINE contains the name of the COM port followed by a colon (i.e. COM1:). The LINK line for this COM port would begin with "LINK_COM1:=". The [port1] setting is the number of the port decryption (see next section) that connects the BBS to the user. The [port2] setting is the number of the port description that connects the BBS to the MPGS.

● The following entries describe the port types and parameters that were configured in the last section of the INI file. The entries in this section are:

PORT_[port]=[type]

The PORT entry specifies the type of port to use for port [port] (see [port1] and [port2] above). Valid port types are SERIAL, IPXLAN, DIGIBOARD, and DIRECT. When using *APCi PassThru Cables* with this utility, the passthrough channel is of type DIRECT.

BASE_[port]=[address]

● The BASE entry determines the base address of the COM port to use for port [port]. The base address can be entered in either decimal or hex (e.g. COM1: would be either 1016 or 0x3F8). If using hex, be sure to include the "0x" before the address. This entry is only required for SERIAL nodes.

IRQ_[port]=[number]

The IRQ entry determines the IRQ of the COM port to use for port [port]. Valid values are between 2 and 15 inclusive. This entry is only required for SERIAL nodes.

CHANNEL_[port]=[number]

The channel entry specifies the DigiBoard channel number to use for port [port]. This entry is only required for the DIGIBOARD port type.

BAUD_[port]=[number]

The baud entry specifies the baud rate to use for port [port]. Valid values are 9600, 19200, 57600, or 115200. This entry is only required for port types SERIAL and DIGIBOARD.

SERVER_[port]=[address]

The server entry specifies the LAN address of the MPGS. The value [address] is the IPX address of the MPGS, excluding the network number and socket ID. You can use the *APCi Network Snooper* to determine a node's network address. This entry is only required for the IPXLAN port type.

The APCi Gateway Utility Display

The display for the *APCi Gateway Utility* provides statistics for the system operator such as the username of the player accessing the APCiMPGS, the amount of time left online, the types of ports used for data transmission, and other data-related statistics. Pressing the <SPACE-BAR> toggles the lower status display to indicate either the users total time on the APCiMPGS, the users remaining time on the BBS, or the characters per second being transmitted and received by the user. Pressing <ESC> will immediately disconnect the user

from the APCiMPGS and return them to the BBS. Doing so during games such as DOOM will ruin the game for all players involved.

Passthrough Method

While the *APCi Gateway Utility* itself does not normally apply to nodes which are using the APCi PassThru Cable, it may be used in conjunction with the *APCi BBS Door Accounting Utility* to charge users in advance for access time to the APCiMPGS and remove the access when their time has been used. See the the **APCIGATE.INI** entry "PORT_[port]=[type]" in the previous section.

CHANGEPW.EXE

The **CHANGEPW.EXE** file located in the GATEWAY directory of the APCiMPGS Utilities diskette is a change password utility. Use this utility to generate a customized code file that activates the APCiMPGS.

This code file is necessary to allow users to select a menu option and be "gated" backward to the APCiMPGS system as illustrated in *Figure 3* of the CONFIGURATION EXAMPLES section of this manual.

The file generated is named **GOMPGS.MSG** and essentially contains two codes used to activate the APCiMPGS. The codes contained within this file will activate the MPGS for users who are logged into the BBS via *APCi PassThru Cables*. This file must be displayable from the menu option which users select to enter the APCiMPGS.

APCi MPGS Network

The *APCi MPGS Network* is a FIDO-style packet network that supports email, message bases, and file attachments.

Participation in the *APCi MPGS Network* requires that you have a working FIDO mailer and tosser. APCi will not provide support for these utilities. If you are interested in this feature, please send email to the Sysop on the APCi BBS requesting a node number.

APCi BBS Door Accounting Utility

The *APCi BBS Door Accounting Utility* is a shareware application that may be used on BBSs that wish to receive and account for prepayments for time used in external "door" modules.

The *APCi Door Accounting Utility* program runs as a standard BBS door. The command line syntax is as follows:

ACCOUNT.EXE [command] [dropfile]

Where [command] is any of EDIT, START, END, or PACK and [dropfile] is the name of the BBS drop file to read. The ACCOUNT.EXE program has two basic functions:

1) to allow users to purchase time and check their balance, and

2) to track the time they spend in a door.

The first thing you need to do is add the accounting program to your BBSs doors listing.

The command line to use is:

ACCOUNT.EXE EDIT [dropfile]

Where [dropfile] is the name of the BBSs drop file. This will start the accounting program in edit mode. Edit mode allows users to learn how to purchase time, check their current balance, and purchase more time. System operators are also given the ability to edit a user's balance, to check the status of the accounting system, and to add more subscription codes to the database.

Next, you need to add the accounting program to the door programs for which you wish to charge access. Simply add two commands to the batch file that loads the door. The first command "starts the clock" and checks the user's balance. The accounting utility will modify the BBS drop file to reflect the amount of paid time they have remaining and exit back to the batch file that then loads the door. After the door is complete, the batch file needs to call the accounting program once again to update the user's balance to reflect the time they spent in the door. The command options START and END are used to mark when a user enters and exits the door. Examples:

ACCOUNT.EXE START [dropfile]

ACCOUNT.EXE END [dropfile]

If the user does not have enough time left to enter the door, the accounting program will exit with a DOS errorlevel of 2 when the START command is used. Your batch file needs to check for this value and exit back to the BBS if it is found. See the sample batch file that is included with *the APCi Gateway Utility* (**APCIGATE.BAT**) for more information.

After installing the accounting utility in your batch files, you need to configure it for use with your hardware. The **ACCOUNT.INI** file contains all the information the program needs to run on a multiline BBS. Edit this file with any ASCII text editor. The settings contained in the INI file are:

NAMELINE=[number]

The number of the line the user's name is on.

TIMELINE=[number]

The number of the line the user's time left on-line (in seconds) is on.

NODELINE=[number]

The number of the line the user's node number is on.

COMLINE=[number]

The number of the line the user's COM port is on.

ANSILINE=[number]

The number of the line the user's ANSI setting is on.

SYSOPLINE=[number]

The number of the line the user's security level is on.

ANSI=[string]

The value of ANSILINE that denotes ANSI graphics are in use.

SYSOP=[string]

The value of SYSOPLINE that denotes that this user is a SysOp.

REGNAME=[string]

The name of the user the program is registered to as shown on your disk label.

REGCODE=[string]

The registration code for the user the program is registered to as shown on your disk label.

ENFORCEBBSTIME=[1|0]

This value may be either 1 or 0. When set to 1, the accounting utility will enforce the BBSs time limit, even if the user has purchased more time than the BBS would normally allow in a single call. Setting this value to 0 will cause the accounting program to override the BBSs per call time limit and allow the user to remain in the door until all their paid time has been used. Due to the way some BBSs react when a user re-enters the door with negative time left on-line, this value should be set to 1 until you have had a chance to test your BBS with this option disabled.

FREE=[number]

The number of free seconds to give a new user to demo your system. Any new user signing in will be given [number] free seconds to try any pay doors you have installed. We recommend setting this value to 3600 seconds, or one hour.

CODE_10=[number]

The number of seconds a user will have added to their account when they purchase a $10 subscription code.

CODE_25=[number]

The number of seconds a user will have added to their account when they purchase a $25 subscription code. NOTE: This option will be disabled if you incorrectly enter your registration code or user name (see above).

LINK_[comline]=[port]

Each LINK entry describes how a user is connected to your BBS. You will need a LINK entry for each different COMLINE

entry you have. The [port] value is a number that is used for reference below.

PORT_[port]=[type]

Determines the port type to use for port [port]. Valid values are SERIAL, DIGIBOARD, and LOCAL.

BASE_[port]=[address]

Determines the base address of the COM port to use for port [port]. The base address can be entered in either decimal or hex (e.g. COM1: would be either 1016 or 0x3F8). If using hex, be sure to include the "0x" before the address. This entry is only required for SERIAL nodes.

IRQ_[port]=[number]

Determines the IRQ of the COM port to use for port [port]. Valid values are between 2 and 15 inclusive. This entry is only required for SERIAL nodes.

CHANNEL_[port]=[number]

Determines the channel to use for port [port]. This entry is only needed for DIGIBOARD nodes.

BAUD_[port]=[number]

Determines the baud rate to use for port [port]. This entry is only needed for SERIAL and DIGIBOARD nodes.

Now that you're all configured, all you need to do is get hooked up with TABS, the *Telephone Access Billing System* from True Media, Inc. Information on becoming a member of this service is contained in the **TABSINFO.TXT** file on your distribution diskette. After joining TABS,

● download a set of $10 codes and a set of $25 codes and place the files in the same directory as the accounting program. Log in as SysOp and from the accounting program's SysOp menu, select Import New Codes. The accounting program will read the listing of new codes and add them to it's database. After the codes are imported, the **TABS??.TXT** file will be deleted! Be sure to back it up in case you need to re-import the list!

APCi Network Snooper

The *APCi Network Snooper* is a utility that will display the IPX network address of the system on which it is executed. It is located on the original APCiMPGS distribution diskette.

THE NATURE OF ON-LINE NETWORK GAMING

In the very recent past, true network gaming was only possible via local area networks. For gaming purposes, LANs offer virtually unlimited speed and bandwidth. When remote users connect to the *APCi MultiPlayer Game Server* via standard telecommunications routes and high-speed modems, they are essentially creating a wide area network (WAN). Comparatively, telecommunications routes offer very limited speed and bandwidth as well as greatly increased latency.

The amount of time passing while a typical network gaming packet is transmitted from one user to another over a common LAN may be less than 0.001 seconds. The amount of time passing while a typical network gaming packet is transmitted from one user to the APCiMPGS and finally to other users is greater than 0.100 seconds, at least 100 times slower than a LAN!

Network games such as id Software's *DOOM* and *DOOM II* require that players be completely synchronized. As a matter of fact, absolutely no gaming data may be lost. Therefore, the speed and quality of the game is almost totally dependent upon the individual users.

If just one user has an improper modem initialization or system configuration, it will degrade if not totally ruin the game for all other users. It is not safe for users to assume that the system configuration used for single-player or two-player gaming is appropriate for multiplayer network gaming. Unfortunately, most of them fail to read important documentation and immediately resort to on-line experimentation.

● Please be advised that unknowledgeable or irresponsible users may quickly give an entire on-line service a poor reputation. It is for this reason that we strongly suggest that system operators devise a method of pre-testing new users before they are granted access to the APCiMPGS.

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● TROUBLESHOOTING

If you are experiencing difficulties and have read and followed all documentation, including program HELP sections and README files, and you feel that everything has been setup and configured correctly, you may need to do a little troubleshooting. This section contains several common problem situations as well as suggested solutions.

First of all, test all standard communications ports with a modem that is known to work and a terminal emulation program. If you can open the port at 38400 baud and successfully connect to another modem, chances are your communications port is fine. Be sure that you do not have interrupt conflicts. No more than two standard communications ports should be configured on a single PC. If you are using and internal modem, make sure that there is not a communications port on the same interrupt or base address. If there is, it should be removed from the PC or otherwise disabled, even if it is not in use.

Next, test all serial communications cabling. Modem cables should be tested between a known good port and modem. Null-modem cables should be tested between two systems with known good ports running terminal emulation programs with identical port settings.

If you are using a Digiboard in the *APCi MultiPlayer Game Server*, make sure that the interface card is seated in the slot correctly and that the memory base address, I/O port address, and interrupt settings do not conflict with any other device in the system. Also, check that the device driver has been configured properly for these settings. The starting port number of the first Digiboard in the system should be one (1), and both DOS and EBIOS support should be active.

● If the Digiboard driver loads properly and successfully initializes the Digiboard, yet the APCiMPGS does not load properly and tells you to "REBOOT NOW," your **APCIMPGS.INI** file has been improperly configured. Delete it and run SETUP again.

If your Digiboard seems to be configured properly, and the APCiMPGS loads successfully, but you are unable to connect to the APCiMPGS, the next step depends upon your configuration.

● If you are using the APCiMPGS as configured in *Figure 4* of the CONFIGURATION EXAMPLES section of this manual, you should boot each BBS node system cleanly (loading only DOS, no device drivers or TSRs), execute a terminal emulation program, open the port which is connected via null-modem cable to the APCiMPGS, and press the <SPACE-BAR>. If the APCiMPGS welcome message is displayed properly, then all hardware has been configured properly, and chances are that the *APCi Gateway Utility* has not been configured properly. If the welcome message is not displayed properly, and you have checked your port and baud rate settings to ensure that they match those of the Digiboard, chances are that you have a hardware problem. You should check your communications ports, cables, and Digiboard as described above.

● If you are using the APCiMPGS with *APCi PassThru Cables* as configured in *Figure 3* of the CONFIGURATION EXAMPLES section of this manual, you should first ensure that your cables are plugged into the correct Digiboard channels as specified in your **APCIMPGS.INI**. The *APCi PassThru Cable* basically consists of a modem cable which is the long section between the DB25 male and DB25 female connectors, and a null-modem cable which is the long section between two DB25 female connectors. On a separate system running a terminal emulation program, boot cleanly and test the modem cable section of the *APCi PassThru*

● *Cable* between a known good communications port and modem. You may test the null-modem section of the *APCi PassThru Cable* by configuring your APCiMPGS to have a non-passthrough serial channel and placing the cable between that channel and the known good communications port of the separate system running a terminal emulation program. Once again, pressing the <SPACE-BAR> should display the welcome message from the APCiMPGS.

You should also use the modem section of a known good *APCi PassThru Cable* to test your BBS communications ports by placing it between the ports and a known good modem. If the BBS is unable to initialize the modems, you may have faulty communications ports or conflicts with your communications hardware on your BBS. If the modems initialize correctly, yet the BBS is unable to connect to the APCiMPGS and all hardware has been tested as previously

● described, ensure that the settings of the communications ports of the BBS match those of the APCiMPGS.

If you are making IPX LAN connections to the APCiMPGS, you should ensure that all networking drivers are of the same version and have been loaded correctly on both the APCiMPGS and the systems which are connecting to it. You should also ensure that the same network frame type is being used on all systems, and that they are all on the same network number. Please note that LAN connections to the APCiMPGS may not pass through bridges or routers. If any node of the APCiMPGS has been configured as an IPX LAN node and all network drivers have been loaded correctly, the APCiMPGS will display its full network address at the lower right corner of the display. The 12-digit node number located between the two colons is the IPX node address of the

● APCiMPGS. This is the number that should be referenced when making IPX connections to the APCiMPGS using either the *APCi Gateway Utility* or the *APCi MultiPlayer Game Client.*

You should test each BBS node by loading only IPX LAN support and running the *APCi MultiPlayer Game Client* software in multiplayer VGC mode. See the HELP section located under the HELP menu of the *APCi MultiPlayer Game Client* software for more information. If you are successful in connecting to the APCiMPGS using this method, but are unable to connect using the *APCi Gateway Utility*, you may have an incorrect parameter specified in the **APCIGATE.INI** file. Please refer to the *APCi Gateway Utility* configuration options in the SUPPORT UTILITIES section of this manual.

If the *APCi MultiPlayer Game Server* seems to be functioning properly in that connections are successful and players are able to join each other in a chat group, but you are experiencing difficulties starting or staying in games, you should refer to the HELP documentation provided with the *APCi MultiPlayer Game Client* software. The success and quality of games is 99% dependent upon the players' systems, configurations, and connections. Players should have systems which are practical—not merely sufficient—for executing the games being played. Generally, a 486SX25 with 4MB of RAM, a compressed hard disk drive, and 16-bit (ISA) video is NOT practical for games such as *DOOM* or *DOOM II*. We have experienced a wide range of bizarre problems with USR Sportster modems due to general flakiness of the chipset. We do not recommend use of these modems at this time as USR has not been able to provide reasons or solutions for the problems we have experienced.

If you are still unable to achieve operational satisfaction with the *APCi MultiPlayer Game Server*, please feel free to give us a call for additional troubleshooting and performance tips. Please have your serial number and documentation ready when you call.

MORE TO COME!

As more games become available, you can rely on us to support anything and everything possible. With increasing data transmission speeds and the impending onset of digital communications, you can expect to see more and more players interacting in extremely complex virtual worlds. Welcome to the ground floor of what is sure to become the best source of gaming entertainment in the world!

We always welcome your ideas! If you have suggestions for new multiplayer games, or know of current games which you would like to play in multiplayer mode, please give us a call!

If you are a developer interested in building support for the *APCi MultiPlayer Game Server* into your gaming application, we need to hear from you.

Address-
Applied Personal Computing, Inc.
Corporate Offices
1218 Paragon Drive, Suite 2
O'Fallon, Illinois, USA 62269-1757

Phone Numbers-

Voice:	(618) 632-7282
Voice (US and Canada):	(800) 535-APCi
FAX:	(618) 632-7287
BBS:	(618) 628-APCi

Internet Addresses-

Telnet:	**bbs.apci.net**
FTP:	**ftp.apci.net**
HTTP:	**www.apci.net**
Email:	**mpgsinfo@apci.net**