

Installation Specifications for PCC Systems



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2006/09/20 15:43:18

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1. Introduction

This document contains a detailed explanation of the hardware installation requirements for PCC systems. These specifications define what is included in your Partner Subscription and provide information to help you avoid problems during the design and installation of your office network. Please read these instructions carefully, whether you are about to install your first Partner system, are upgrading existing PCC hardware, or simply want to ensure that your system remains healthy for as long as possible.

An updated copy of these specifications is included with every Partner Subscription. To view, search, or print the latest version of this information, contact PCC or visit the web version of this document (<http://learn.pcc.com/installationspecifications/>).

Offices that do not adhere to these guidelines not only violate the terms of their subscription agreements with PCC, but may also experience system problems and service delays. These guidelines are very simple to follow, however. If you have any questions, please do not hesitate to call our Customer Care Team (800-722-1082). We are always glad to help.

2. The Partner Server

Unless otherwise specified, your Partner System will be a UNIX-based server network. This section includes important guidelines for the placement and maintenance of your server.

- PCC recommends that you place the Partner Server (or "Server") away from the front-desk area to limit its exposure to physical activity.
- The Server consists of the computer itself, a monitor, and keyboard. The monitor and keyboard are often called "the console." The console must be within two feet of the Server.
- A typical layout places the Server on a firm, level desk or held vertically in a computer stand. The Server has a number of peripheral devices attached directly to it (an uninterruptible power supply, one or more modems, a tape drive, network switches, etc.), so make sure you have ample space for the Server.
- The console should not be used as a workstation by your employees. It is for system operations, backups, error messages, or emergency access to your system. Using graphical programs on the console will reduce overall system performance.
- The Server and attached equipment should be positioned so that your practice's System Administrator has easy access to them for daily backup maintenance and troubleshooting. Ideally, a phone should be nearby for support assistance.
- Dust is a computer's worst enemy. Please make sure that the new home for your Partner system is thoroughly cleaned before the computer is installed. Also, please make arrangements for the area around the computer to be cleaned on a weekly, if not daily, basis. Cleaning should be done by someone familiar with the computer system so that if cables or adapters are accidentally knocked loose they can be properly reconnected.
- Ventilation is also very important for your computer. It is preferable to set up the system on a shelf where it is free from other objects and can ventilate properly. If you plan on putting the computer in a closet, make sure the closet is properly ventilated and that the computer has ample space around it.
- PCC cannot cut holes in your walls, ceilings, or furniture. You are responsible for arranging such work to be completed before the Server is installed.

- If you need to reinstall or move the Server (such as in the event of an office move), PCC can provide free telephone assistance, given 2 weeks notice. PCC can also visit your office and reinstall the hardware at the standard rate of \$1200 per day on-site. Your subscription plan may include an office visit, during which hardware reinstallation could be scheduled.

3. Other Approved Hardware

The purchase and installation cost of your Partner Server is included in your subscription plan. The purchase and installation cost of your individual PCs, printers, or other workstations is not. For complete details regarding approved hardware, read the PCC Supported Hardware Guide (<http://learn.pcc.com/hardware/>). Below is a brief summary of minimum workstation requirements.

Placement: Placement of workstations, terminals, printers, and personal computers depends on where they will be most useful to you. Some hardware has special needs. For example, each workstation should have enough room in front of it for a keyboard and should be located near a network outlet. Laser printers need space to open their paper feed drawers.

3.1. PC Specifications

While Partner's remarkable flexibility allows it to be used with nearly any PC computer, consider the following *minimum* system specifications when purchasing a new Windows PC:

A Windows-Based PC Should Have at Least:

- Intel, Pentium, or Celeron Processor 1.5 Ghz or faster
- 256 MB (minimum) of RAM
- 20 GB (or larger) hard drive
- 15" (or larger) Monitor/Display - a flat panel can save desk space, and a larger monitor will make reports and Partner screens easier to read
- Mouse and Keyboard
- ISA or PCI 10 BASE-T or 10/100 Ethernet Network Adapter
- CD Drive
- Windows 95 (version B), 98, NT, 2000 or XP Professional. If possible, avoid machines running Windows ME or Windows XP Home. These operating systems do not provide many of the tools recommended for network security.

For Better Security and Performance, PCC Recommends:

- Windows XP Professional
- 512 MB of RAM

Old Windows

The Microsoft Corporation no longer supports the Windows 95, Windows 98, and Windows NT operating systems. When possible, PCC will still help you connect machines with these older operating systems to Partner.

Remember Updates

The most important thing to remember when using Windows PCs in your office is to keep your virus protection software *and* Windows operating system up-to-date. You should have someone in your office learn how to perform updates or contract with a local PC vendor.

3.2. Macintosh Specifications

Macintosh Recommended System Specifications.

- Any New Macintosh computer
- For an older, used Macintosh, look for at least:
 - 600 MHz (or faster) processor
 - 128 MB (minimum) of RAM
 - 20 GB (or larger) hard drive
 - Mac OS 9 or OS X
 - Mouse and Keyboard
 - CD Drive

Updates: PCC recommends that Macintosh users run the "Software Update" utility regularly to ensure security on their machines.

3.3. Linux Specifications

Linux is a free UNIX operating system. Linux can run on a PC or a Macintosh Computer. Please follow the above specifications for your PC running Linux or your Macintosh running Linux.

3.4. Printers and Other Peripherals

For a list of supported printers and other peripherals, please read the PCC Supported Hardware Guide (<http://learn.pcc.com/hardware/>). PCC will help you install and support your hardware purchases if you select hardware from our Supported Hardware Guide.

Hardware purchased after your initial installation will be installed by your System Administrator using phone assistance from PCC.

Please note that standard Partner installations include any necessary network switches, a UPS Power Supply, and a single external modem. For example, you may wish to purchase surge protectors for your individual PCs, you do not need to supply one for your Partner server.

4. Internet and Telephone Requirements

A business-class internet service should be wired directly to the Partner server location. The connection can be DSL, cable, T1, ISDN, or other service. PCC will manage routing of the internet connection and sharing it with the computers in your office. You do not need to purchase a router from your internet service provider.

A *dedicated* standard phone line is also required. This is so PCC can troubleshoot system problems at any time. Your system may also use this phone line to perform electronic claim and statement interactions. In this instance, *dedicated* means that the line will only be used for supporting your system. Telephone companies also refer to this type of line as a "dial up voice line" or "POTS" ("Plain Old Telephone Service") line.

The dedicated phone line may not be tied to any telephone system (AT&T Merlin systems, for example). *It may not double as an outside line. It may not be shared with other equipment such as a fax or credit card machine.*

The dedicated phone line must be terminated with a standard RJ11 jack within 10 feet of the site where the Partner Server will reside.

Please note: The dedicated line cannot be used for a remote or home office connection. PCC uses the line to access your system and assist you when necessary. People working from remote offices or from their homes will need additional phone lines and modems or an internet connection. See the section below on remote offices for more information.

5. Electrical Requirements

PCC recommends that you install a dedicated, 3 prong, 110 volt, negative-grounded outlet for the Server's power supply. PCC will supply a power backup unit, also known as an uninterruptible power supply, to protect the Partner Server from power fluctuations and outages. Please make any necessary arrangements with your electrician to ensure that you have a dedicated electrical outlet.

If a dedicated outlet is not installed, you may use a regular wall outlet, provided that it is properly grounded and that there is no electronic equipment on the same circuit with a heavy electrical draw. Equipment that causes problems often includes (but is not limited to) photo copiers, microwave ovens, refrigerators, coffee makers, air conditioners, and most medical equipment. Hardware on a non-dedicated electrical circuit is more likely to experience difficulties due to power draws and surges.

PCC also recommends the use of surge protectors for each of your peripheral devices (workstations, terminals, printers, modems).

6. Cable Requirements and Specifications

Your Partner Server will use a 100Mbps fast Ethernet network in your office. The network will use **Category 5 (Cat5)** unshielded twisted pair (UTP) cables and one or more Ethernet switches. PCC will install a TCP/IP network in your office, including a router and a switch or hub. PCC will not install the cabling upon which the network operates. You must contract with a local vendor to install or make changes to your office's cabling.

6.1. General Cabling Guidelines

- Once you have decided where the servers, workstations, and printers will be located, you need to arrange to have your office cabled properly by an electrician. *PCC can not install cable in the walls, ceilings, or floors of your office.*
- For peripherals located more than a few feet from the Server, cables are typically run through the walls, ceilings, and floors of your office. This not only has aesthetic advantages, but it eliminates exposure of your cables to tugging, tearing, and disconnecting. Plan a path for running each cable. Avoid running cables outside of the walls; if you must, please use wiring guides to cover the cables. Ideally, there will be a "home run" through which all cables will travel to the patch bay.
- All cabling for devices (printers, PC workstations) must run to one central location in the office where the switch and the Server will reside.
- The design should look a lot like an octopus, with many arms returning to a central location. *Do not run a ringed network, resembling a big circle, around the office!*
- **Remember to run the cables to the Server!** If you cannot run all cables to the server, you can run them to a central location where the switch and hub will be located. You may then need two or more cables running to the Server location from the switch. Contact PCC for help designing your wiring plan.
- Cables *must* be labeled at both ends for PCC to identify the cables correctly. Installation delays and hourly charges may result if cables are not properly labeled.
- Finally, PCC suggests that you consider running additional cabling to locations that could house workstations or printers in the future. This will save the expense of rehiring an electrician when you expand your office.

6.2. Cable Specifications

- There are many sources for Cat5 cable and your electrician should have no difficulty finding it. At PCC, we use cable from the Belden Cable company.
- Please note: although flat satin jumper cables may work, they do not meet the specifications set forth in the TCI 568-A or IEEE 803.1 cabling specifications for an Ethernet network. Additionally, we have noticed signal degradation when longer lengths of satin cable are used.
- At least one cable must run to each workstation and each printer on your network. If possible, run cables in pairs for future expandability and flexibility.
- One end of each cable will be terminated in a central location on a patch bay installed in a wall-mounted rack near the Server. The other end of each cable will be terminated in various locations around your practice in a single gang junction box covered with a faceplate that holds an RJ-45 jack.
- Each end of the cable and each faceplate must be labeled in order to identify the start and end points of each cable.
- The Ethernet standard requires 2 twisted pairs. The typical piece of Cat5 cabling has 4 twisted pairs. The jacks used for this cabling may contain up to 4 twisted pairs. Your electricians can decide whether to run 2 twisted pairs to each jack or 4 twisted pairs to each jack.
- You can connect all 4 twisted pairs to one jack. If you decide to place more than one peripheral at a location, you will have to pull multiple pieces of cable.

- You can also connect the 4 twisted pairs to two different jacks in the same outlet. This is more efficient because it requires running less cable, but it is more complex to plan.
- Your electrician needs to know how to terminate the cables. There are many different types of jacks available. We can provide punch down specifications for the Mod-Tap brand jack, part number MUS00002-01.
- Your electrician may choose to install the new network cables in the same junction box and outlet used by either your telephone cables or your serial cables. In these instances, we recommend placing the telephone cables on top, the serial cables in the middle and the network cables on the bottom for consistency. *Do not forget to label each faceplate!*
- Offices with existing Cat5 cabling will need to confirm that their terminating receptacles are "punched down" correctly.
- If there is a problem with the cabling or the peripheral devices attached to the cabling, PCC may require your office to install new cable.

7. Technical Details about Your Network

This portion of the Installation Specifications contains details that are of interest to network support personnel. In the event that you need assistance from a local network support group or if you are really interested in the nitty-gritty of your network configuration, this is where to look first.

Please Note: The information below describes our desired configuration. Your office may use a different network configuration, especially if you had an existing network before installing Partner.

7.1. IP Address Assignment

Your network will be configured using a DHCP server provided by your Partner Server. This means that whenever you turn on a machine that is connected to the network, it will query the DHCP server on the Partner Server for its IP configuration. This allows us to keep the entire configuration of your network in one place and makes it easy to expand, enhance, and adjust your network configuration.

Your network will not use static IP addresses entered into each machine. While this is a very easy way to set up a network initially, it is very inflexible and time-consuming to maintain.

Your DHCP server will assign a specific IP address to each desktop machine, based on that machine's MAC address. This will allow Partner to route printing tasks to the appropriate printer.

Your DHCP server will assign random IP addresses to laptops. This will allow you to easily move the machines from location to location.

Please note: If there is an existing network with a DHCP server, the old DHCP server must be disabled so that the Partner Server can provide DHCP services. A network can only have one DHCP server.

7.2. Telephone Connections to Your Local Network

If you will connect to your office over a phone line, either from home or from a remote office, PCC will create a sub-network for your modem(s). You will use *PPP* to connect your remote computers with your office network. We

will set up one *PPP* server for each modem attached to your machine that is not reserved for PCC.

See the Remote Offices section below for more information.

7.3. Modems

You can not share modems over the network. In other words, the modem(s) connected to the Server are not available to any of the other computers in your office.

7.4. E-Mail

Your Partner Server will act as your PCC e-mail server. It will offer **POP3** and **IMAP** access to your PCC e-mail. You can use nearly any **POP3** or **IMAP** compliant e-mail software package, with the exception of Microsoft Outlook, to read your mail. PCC will only configure, support, and troubleshoot the Thunderbird, Mac-Mail, Pine, and Mutt e-mail software. Your e-mail will be forwarded through PCC. PCC will only assist you with configuration, support, and troubleshooting of your PCC e-mail account.

8. Remote Offices and Connecting From Home

There are many different ways to connect to your Partner Server from a remote location. PCC will help you design and select solutions to meet the needs of your practice. Remote connections usually require high-speed internet access in both locations and may also involve additional connections, routers, or other equipment.

Note: The wiring in your remote location needs to accommodate the type of remote office connection used. The termination of the phone line or internet connection in your remote location must be in an area near the PCs or routers they serve. As with your main office, the wiring design should look like an octopus, with many arms returning to a central location.

You may have a choice of remote office connection solutions with varying prices and features. A brief description of each option follows.

8.1. Single Host Connection Using OpenVPN

For a remote office with a single workstation, or for a small office with only a few PCs, PCC can set up an OpenVPN connection to the main office. OpenVPN is a software package that creates a secure connection between two locations through the internet. In many cases, it requires no new equipment.

This type of connection is perfect for a provider or biller who wishes to work from home, or for small remote offices with one workstation. In addition to accessing Partner remotely, the user will be able to print to printers attached directly to the workstation or print to Partner printers in the main office.

Each location needs a high-speed internet connection. In some situations, this might require the purchase of a router for the remote location.

8.2. Multiple Host Connection Using VPN

A larger remote office may need several workstations, printers, and additional networked equipment connected remotely to the Partner server. In this situation, PCC requires the purchase of an approved VPN (Virtual Private Network) router. PCC will order and configure the VPN router for you. A switch or additional hardware may also be required.

As with the single host connection, the main office and all remote locations will need a high-speed (usually cable or DSL) internet connection.

8.3. Connection Types and Other Methods

8.3.1. DSL or Cable Internet Connections

Cable and DSL internet connections are the two most commonly available high-speed internet solutions. They are usually sold by your local cable television or telephone service provider. In most situations, routers and additional equipment are not necessary.

When each location has a high-speed internet connection, using DSL or Cable service, PCC connects the two locations with single or multiple virtual private network connections, as previously described.

8.3.2. T1 Connections

A T1 line provides communication that is often faster and more reliable than a DSL or cable internet connection. Some offices prefer a T1, PCC does not require it.

- Two offices with T1 internet connections can be connected using VPN routers.
- For additional speed and reliability, a dedicated T1 line can be set up between two locations. This is called a "point-to-point" T1 line. Your local service provider may offer this feature to you. PCC does not require it.

8.3.3. Modem Connections Over a Telephone Line

Modem-to-modem connections can be used when only one workstation and one printer are needed at a particular location and high-speed internet access is not available.

A modem-to-modem telephone line connection requires:

- Two standard, analog voice phone lines, one per location. One line will be located in the Main Office, terminating near the Partner Server. The other line will be at the remote location, terminating near the workstation. Please note that these lines are in addition to the dedicated Partner Server phone line required for standard PCC service.
- One PCC approved modem configured in the remote location.
- One PCC approved modem in the main office to accept the incoming connection. Please note that this modem is in addition to the dedicated phone modem provided in the PCC subscription.
- One available serial port on the Server.
- One PCC approved printer to connect to the parallel (or USB) port of the PC if a printer is needed.

Given the inherent limitations and added equipment needed for a telephone connected remote office, an internet solution is almost always preferable.

8.3.4. ISDN Connections

PCC does not currently recommend ISDN connections because more affordable options are usually available. When other high-speed connection types are not available, however, ISDN is supported. As with the other VPN router solutions, ISDN lines allow you to have multiple networked workstations and independent network printers at your remote location.

The ISDN connection method requires:

- Two ISDN lines, one at each location.
- Two approved ISDN routers to facilitate the connection and support the network in the remote office.
- An approved network switch on a wall rack.
- Remote location equipment, including workstations, printers, cabling, and a patch panel. This equipment should meet the requirements of your primary office.

8.3.5. DDS (Digital Data Service) Remote Office Connections

DDS lines are an older technology that PCC still supports. DDS creates a limited network at a remote location, operating at speeds that are slightly faster than a traditional phone line.

The DDS connection method requires:

- A DDS line between the two locations.
- Two PCC approved DDS routers to facilitate the connection and support the network of the remote office.
- An approved network switch on a wall rack.
- Remote location equipment, including workstations, printers, cabling, and a patch panel. This equipment should meet the requirements of your primary office.

