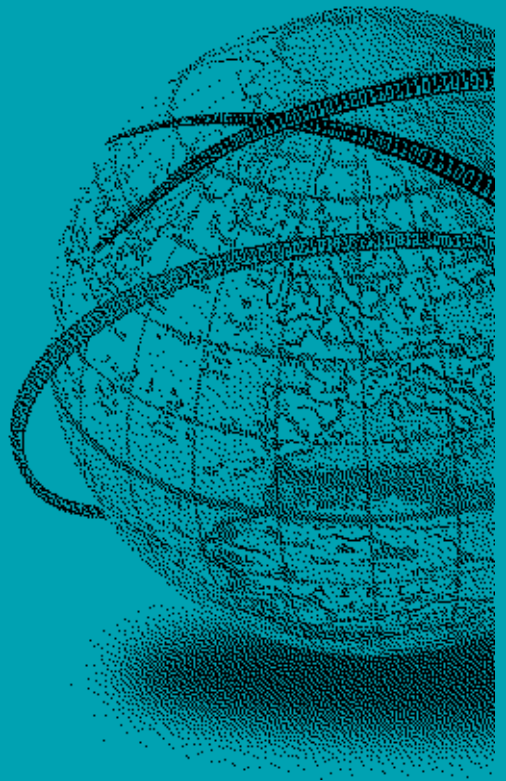


FirstClass[®]



Installing FirstClass *for Mac OS*



SoftArc Inc.
Global Area Communications

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FirstClass is an advanced communication system that integrates e-mail with group conferencing, access to corporate databases, forms processing, real-time discussions, and online communications functions. Users can access FirstClass across a network or remotely (for example, using a modem).

FirstClass consists of two major components, the FirstClass Server and the FirstClass Client. With the client, FirstClass users log into the FirstClass system and use the services provided by the server. The server, which usually runs on a separate, dedicated computer, controls who can connect to the FirstClass system, what users can do when they are connected, and what information they can see.

Installing FirstClass provides instructions for installing the FirstClass Server software on a Macintosh computer. To install the FirstClass Client software, refer to *Using FirstClass*.

Purchasing a FirstClass system

When you purchase your FirstClass system, you can purchase a basic server or an enterprise server. The basic FirstClass Server:

- accepts connections over an AppleTalk network or over a modem

Other network protocols are not enabled.

- supports up to two remote sessions

Each remote session allows one user to connect remotely (by modem, for example) at any given time. When you increase the number of remote sessions, you increase the number of users who can connect to your system remotely at any one time.

- supports up to five regular users (plus the administrator)

Unlike remote users, who can only connect with a remote session, regular users can connect with either a network or remote session.

- supports connections with the FirstClass Client for Mac OS

The enterprise server has all of these features and also contains a number of the optional modules described in [“Optional modules” on page 8](#).

Optional modules

You can license the following optional modules on your server. (The enterprise server includes the first three optional modules.)

Windows Services allow users of the FirstClass Client for Windows and the FirstClass Simple MAPI Client to connect to your server with the IPX protocol.

TCP/IP Services allow users to connect to your server using the TCP/IP protocol.

Text Services allow users of the FirstClass Client for DOS and users of VT100- or ANSI-compatible terminal emulators to connect to your server.

User License upgrades increase the number of regular or remote users you can register on your system.

Four Remote Session upgrades increase the number of remote sessions you can define on your system. You can use remote sessions for modem and TCP/IP connections. SoftArc also offers multi-port serial cards you can use to increase the number of communications ports available for modem connections.

SoftArc and third-party developers also provide a variety of gateways and database extensions. Gateways provide connectivity to other e-mail systems, like cc:Mail. Database extensions allow users to access an organization's critical corporate data from within FirstClass. For more information about any of these options, contact your reseller or SoftArc Inc.

Who should read this guide

This guide is for the administrator of a FirstClass Server running on a Macintosh or compatible. It assumes that the reader is familiar with the basic operation of a Macintosh, and with the FirstClass Client software. (To find out more about the FirstClass Client software, refer to *Using FirstClass*.)

Inside this guide

[Installing a new server \(Chapter 2\)](#) provides instructions for installing the FirstClass Server software from a CD-ROM.

[Configuring your system \(Chapter 3\)](#) provides instructions for licensing and naming your FirstClass Server.

[Configuring connections \(Chapter 4\)](#) explains how to configure your server to accept connections from users.

[After the installation \(Chapter 5\)](#) explains how to back up and start your server.

[Upgrading an existing server \(Chapter 6\)](#) provides instructions for upgrading an existing FirstClass post office to version 3.5. If you have an existing FirstClass installation, you must upgrade your post office before you install the new version.

[Troubleshooting \(Chapter 7\)](#) provides instructions for troubleshooting problems with license diskettes and modem and network sessions. It also discusses the extensive support network provided by SoftArc Inc.

[The FirstClass folders \(Appendix A\)](#) describes the folders created during installation of FirstClass.

[The NETINFO file \(Appendix B\)](#) describes the NETINFO file, which allows you to customize your IPX connection.

[Modem concepts and standards \(Appendix C\)](#) explains some of the concepts and standards that you should understand when selecting, purchasing, and configuring a modem.

[Modems: advanced information \(Appendix D\)](#) explains how to change the advanced configuration options for modem sessions.

[The MDM file format \(Appendix E\)](#) describes the format of the text files that store information about a particular type of modem.

[Connection scripts \(Appendix F\)](#) explains how to set up connection scripts for use during modem connections.

[Glossary \(Appendix G\)](#) defines terms used in this manual, as well as related terms.

Symbols and conventions

Throughout this document, there are several symbols and conventions of which you should be aware.

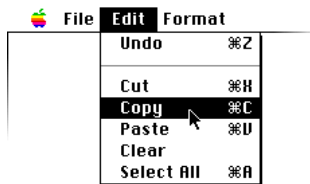


Warning: Information that helps you prevent interruptions in service or loss of data. You should watch out for these warnings and make sure you understand them.

Note: Information important to the smooth running of your system.

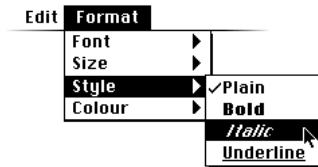
Choosing menu commands

To describe the menu commands you have to choose, we've adopted the following convention. Suppose, for example, a procedure requires you to copy an item. As you probably know, first you must click on Edit in the menu bar, and then choose Copy from the Edit menu.



In this guide, we say: From the menu bar, choose Edit → Copy.

For the more complicated choices arising from hierarchical menus, we simply extend the form. For example, a procedure might require you to choose Italic using the following menus.



In this guide, we say: From the menu bar, choose Format → Style → Italic.

Choosing alternatives

For some of the procedures in this manual, there are several different ways you can perform the same task. For example, to configure network sessions, you could use any of the following methods.

- Choose Configure → Network Sessions from the menu bar.
- Select the Network Sessions entry in the Session List and choose File → Open Session.
- Select the Network Sessions entry in the Session List and type the keyboard shortcut Control + O.
- Double-click the Network Sessions entry in the Session List.

For simplicity's sake, we provide only one alternative in a procedure, usually the menu command. Keep in mind, however, that you can use whichever method you prefer.

Folder and conference names

We use the following format to refer to nested folders and conferences.

Folder 1 → Folder 2 → Folder 3

For example, to refer to the Server folder, which is located in the FirstClass Post Office folder, we say FirstClass Post Office → Server.

Entering data

To describe data or commands you have to enter, we use the following form.

```
WAITFOR '<text1>' '<text2>' ... -T<nnn>
```

where:

- text enclosed by angle brackets represents variables for which you must choose a value

In the example, <text1>, <text2>, and <nnn> are variables. When entering variables, do not type the angle brackets.

- text not enclosed by angle brackets must be entered exactly as shown

In this example, you must type “WAITFOR”, the –T and the single quotation marks exactly as shown.

- an ellipsis (...) indicates that a list of variables can be as long as you need

For example, to instruct the server to wait 20 seconds for the words “service”, “disconnect”, or “no carrier”, you might enter data such as the following:

```
WAITFOR 'service' 'disconnect' 'no carrier' -T1200
```

Examples and illustrations

To explain and illustrate the procedures in this manual, we’ve created a fictitious company called Veritec Inc.

Veritec Inc. is a growing company with headquarters in Boston, a west coast sales office in Los Angeles, and a two-person office in San Francisco. It also has a Canadian sales office in Toronto, and a European headquarters in London. Veritec develops an advanced hardware and software product for the entertainment industry. It uses FirstClass for internal communication, and to support its customers.

Installing a new server

This chapter provides instructions for installing the FirstClass Server from CD-ROM.

Preparing for installation

Before installing your FirstClass system, prepare for installation by performing the following tasks:

- [assembling the things you need](#)
- [setting the date and time](#)

Assembling the things you need

To install the FirstClass Server you require the following:

- any Macintosh or compatible computer running System 6.0.4 or later

The computer must have the following hardware and software installed:

- a CD-ROM drive
- at least 3 megabytes (MB) of free disk space for the FirstClass Server software

Plus, you need additional disk space to store e-mail and conferences.

- a minimum of 1.5 MB of RAM (for 68K Macintosh computers) and 2.2 MB (for Power Macintosh computers), plus 100 KB for each session

If you will be using modem sessions, you also need a separate modem for each session. For each modem, you also require the following:

- a hardware handshaking modem cable (if the modem is an external modem)

A cable is provided with your FirstClass Server.

- an available communications port
- a telephone line

If you will be using network sessions, configure AppleTalk on the server computer. If you are running the network sessions over an Ethernet network, you need a network interface card (NIC) installed on the server computer. If you are running network sessions over a LocalTalk network, ensure that the LocalTalk network is configured correctly. For more information, refer to [“Setting up network sessions” on page 22](#).

Applications and extensions on the FirstClass Server computer

The computer should not be running any applications, extensions, or control panels (virus scanners, screen savers, automatic disk compression utilities, and so on) that are not required by the FirstClass Server. These applications and extensions can interfere with the operation of the server.

Virtual memory on the FirstClass Server computer

Do not enable virtual memory on the FirstClass Server computer. Enabling virtual memory on the computer might result in poor system performance.

Setting the date and time

The date, time, and time zone must be defined correctly on the server computer, so that the time and date are correct on messages received from other servers. When your FirstClass Server receives a message from a server in another time zone, it converts the time that the message was sent to the corresponding time in the current time zone. To do so, your server needs information about the time zone in which the other server is located.

Use the Date & Time and Map Control Panels to ensure that the date, time, and time zone are set correctly.

Installing the software

To install your FirstClass Server, follow these steps. (If you are upgrading an existing server, refer to [Chapter 6, “Upgrading an existing server”](#).)

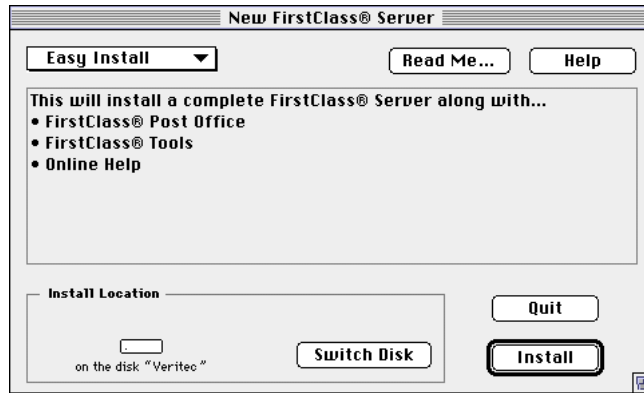
- 1) Insert the FirstClass 3.5 CD-ROM into a CD-ROM drive.

The FirstClass 3.5 window appears on your desktop.

- 2) Double-click Install FirstClass Server.

The splash screen appears.

- 3) Click Continue until the New FirstClass Server window appears.



- 4) To install the server on a different volume, click Switch Disk and select the volume.
- 5) To install all FirstClass components, click Install. The program installs the FirstClass Server and notifies you that the installation is complete. Skip to [step 7](#).
- 6) To install selected components, select Custom Install. Select the components you want to install, and click Install. The program installs the FirstClass Server and notifies you that the installation is complete.
- 7) Click Quit.

The Setup Wizard upgrades your post office files to the new version. When the upgrade is complete, you must rebuild the FirstClass Directory.

To do so, follow these steps.

- 1) Start the FirstClass Tools application.
- 2) Choose File → Rebuild Directory.
- 3) Click OK. (Do not select any of the rebuild options.)

Registering your software

To become eligible for free technical support and software upgrades, you must register your server. For more information, refer to your *Getting Started* card.

Obtaining software upgrades

Upgrades of the FirstClass Server are distributed freely on SoftArc Online. To obtain the latest version of the software, log into SoftArc's own FirstClass system, SoftArc Online.

Using the FirstClass Client, you can connect to SoftArc Online in two ways:

- **By modem:** The FirstClass Client ships with a settings document that is configured to connect to SoftArc Online by modem. The phone number for SoftArc Online is 905-415-7070.
- **Over the Internet:** For customers with connections to the Internet, FirstClass Client ships with a settings document that is configured to connect to SoftArc Online using the TCP/IP protocol. SoftArc Online uses the standard FirstClass port, 510, and its IP address is 198.133.37.10.

You can also connect to SoftArc Online with any VT100- or ANSI-compatible terminal emulator. Configure the application to use 8 data bits, no parity, 1 stop bit, and a speed of up to 28800 bps. Use the application to dial 905-415-7070. Although you won't see the friendly FirstClass Client interface, you will be able to obtain the latest version of the software.

The latest version of the FirstClass Server is located in the Conferences → Software Libraries → Product Updates → Mac Server Updates conference. If you don't have access to this conference, you have not registered your software. To register, refer to your *Getting Started* card.

Configuring your system

After installing your FirstClass system, you must configure it. Configuring the system entails [licensing and naming the server](#).

Licensing the server

When you initially install the FirstClass Server, it has no serial number. You must assign the server a serial number before you can start it. To assign a serial number, use the FirstClass Server License diskette.



Warning: Do not install the same license on two different servers. This is a violation of your license agreement, and two servers with the same license cannot communicate with each other.

You might also have purchased one or more of the optional modules described in [“Optional modules” on page 8](#). For each option purchased, you have a separate diskette which allows you to add that option to your system.

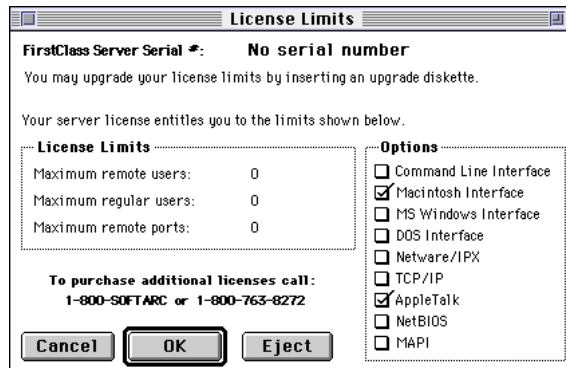


Warning: Do not add the same copy of an optional module to two different servers. This is a violation of your license agreement, and two servers with the same license cannot communicate with each other. If you want to move an optional module from one server to another, you can remove it from the server on which it is installed (refer to [“Removing a license” on page 19](#)) and then install it on the new server, using the following instructions.

To license the server, follow these steps.

- 1) Ensure that the license diskettes are write-protected.
- 2) Start the FirstClass Tools application.

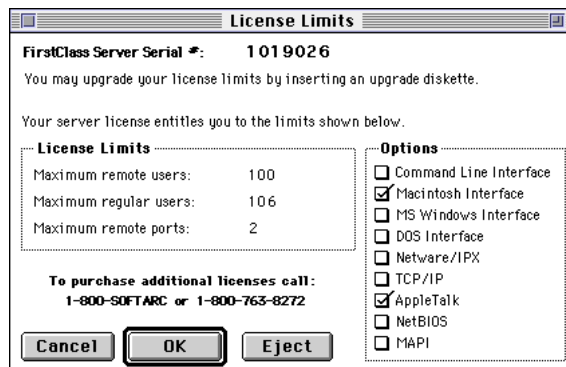
If you haven't licensed your server yet, the License Limits form appears when you start FirstClass Tools. Skip to [step 4](#).



- 3) If the form doesn't appear, display it by choosing Configure → Add License.
- 4) Insert the license diskette. The first license you should add is the Server License. After installing the server license, you can add any other licenses.

FirstClass Tools updates your license limits and ejects the diskette. Repeat this step for each additional license diskette.

- 5) Click OK.

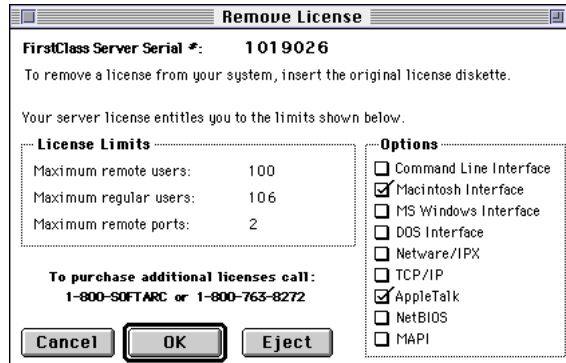


The example shows a server licensed for 100 remote users and 106 regular users.

Removing a license

You might need to remove a server license or optional module from your server. You might do so, for example, if you want to move an optional module to a different server. To remove a license, follow these steps.

- 1) From the FirstClass Tools menu, choose Configure → Remove License.

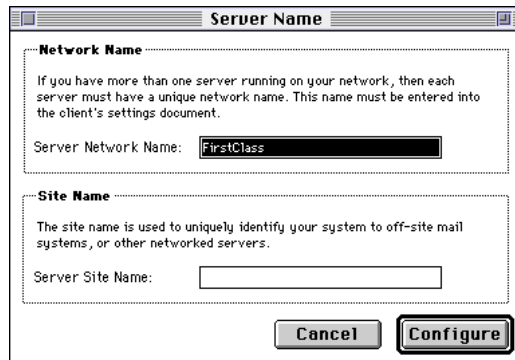


- 2) Insert the diskette containing the license you want to remove.
- 3) Click OK.
- 4) Repeat [step 2](#) to [step 3](#) for each license you want to remove.

Naming the server

If your server will be part of a network of FirstClass Servers, or if it will share a network with other FirstClass Servers, you must assign it a unique name. To assign a name, follow these steps.

- 1) From the FirstClass Tools menu, choose Configure → Server Name.



- 2) For Server Network Name, enter a unique name by which your FirstClass Server will be known on the local area network (LAN).

Users who connect to your server with AppleTalk or IPX network sessions specify this name in their settings documents. Administrators who set up gateways that connect to your server with AppleTalk or IPX network sessions specify this name in the Gateway Configuration form. If you change this name, you must notify all users and all administrators of gateways that connect to your server with AppleTalk or IPX.

- 3) For Server Site Name, enter a name to identify the FirstClass Server within the FirstClass system. (Often this name is the same as the Server Network Name.)

The Server Site Name is used for routing of mail within the FirstClass system. When administrators of other servers in the FirstClass system create a gateway or route to your server, the gateway or route name is the Server Site Name for your server. If you change this name, you must notify the administrators of all servers in your FirstClass system so they can update their gateways and routes.

- 4) Click Configure.

Configuring connections

You must configure your server to accept connections from users. The basic server is configured to accept connections from users of the FirstClass Client for Mac OS. Users can connect either over an AppleTalk network or with a modem. The enterprise server accepts connections from users of the FirstClass Clients for Mac OS, Windows, and DOS, across AppleTalk, IPX, and TCP/IP networks and modem connections.

You can obtain optional modules to allow your server to accept connections from users connecting with other user interfaces and protocols.

Optional connections

In many enterprises, users have different platforms of choice. At Veritec, for example, many users prefer to work on a Macintosh, but others prefer to work on computers running Microsoft Windows.

The users with Macintosh computers have the FirstClass Client for Mac OS, and are connected to an AppleTalk network. The ones with IBM-compatible computers have the FirstClass Client for Windows, and are connected to an IPX network. By default, the Veritec server, which runs on a Macintosh, support the FirstClass Client for Mac OS.

To enable the server to accept connections from the FirstClass Client for Windows, Veritec's administrator has installed the FirstClass Windows Services module. For more information about Windows Services, refer to *Supporting Windows Clients*.

Other optional modules include the following:

- **TCP/IP Services** allow the server to accept connections across a TCP/IP network like the Internet. Users connecting by TCP/IP can use any user interface for which the server is licensed. For more information about TCP/IP Services, refer to *Supporting TCP/IP Connections*.
- **Text Services** allow the server to accept connections from the FirstClass Client for DOS or a VT100- or ANSI-compatible terminal or terminal emulator. Users can connect with any protocol for which the server is licensed. For more information about Text Services, refer to *Supporting Text-Based Connections*.

Note: If you have both TCP/IP Services and Text Services, users can connect to your server on port 23 with the standard Internet Telnet protocol.

Types of sessions

To connect to a FirstClass Server, users need a session (a logical connection between the server and client applications). The number of sessions supported by your server determines the number of users who can connect at any one time.

Each server supports the following kinds of sessions:

- **Network sessions** for users connecting across a local area network (LAN), using the AppleTalk, IPX, or TCP/IP protocol
- **Remote sessions** for users connecting by modem

You might also use remote sessions for users connecting across a TCP/IP network. For more information, refer to *Supporting TCP/IP Connections*.

By default, the basic server is configured for two network sessions and two remote sessions. You can configure additional network sessions (refer to [“Configuring the number of network sessions” on page 23](#)). To add more remote sessions, you must install one or more Four Remote Session licenses.

Setting up network sessions

The basic FirstClass Server comes equipped to support LAN access across an AppleTalk network. Optional Windows Services and TCP/IP Services modules allow users to connect over IPX and TCP/IP networks, respectively. For more information about these optional modules, refer to the documentation that comes with them.

Setting up network sessions involves the following tasks:

- [configuring AppleTalk on the server computer](#)
- [configuring the number of network sessions](#)

Configuring AppleTalk on the server computer

To enable LAN access to the server, you must perform these tasks.

- 1) If the server computer does not have a network interface card (NIC) or LocalTalk connector installed, install it.
- 2) Configure and activate AppleTalk on the computer.
- 3) Select a network connection for the computer.

For detailed instructions, refer to your Macintosh manual.

Configuring the number of network sessions

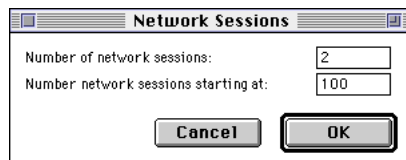
By default, the FirstClass Server allows up to two LAN users to connect at one time. If you do not want to provide LAN access, set the number of network sessions to zero. To support more concurrent network sessions, increase this number.

Because network sessions use system memory and computing resources, you should not define more network sessions than you need. Ideally, the number of sessions you configure should equal the number of users who try to connect at peak times.

Note: The FirstClass Server requires an additional 100 KB of memory for each network session you configure.

To change the number of supported network sessions, follow these steps.

- 1) From the FirstClass Tools menu, choose Configure → Network Sessions.



- 2) For Number of Network Sessions, enter the number of network sessions to be supported.

- 3) For Number Network Sessions Starting At, enter the session ID number to be used for the first network session.

Network sessions are numbered consecutively, beginning with the number specified in this field. For example, if you enter 100 in this field, and 5 in Number of Network Sessions, the network sessions are numbered 100, 101, 102, 103, and 104, respectively.

- 4) Click OK.

Some routers on IPX networks require that the FirstClass Server broadcast a network number, or broadcast separate network numbers for each frame type. If this is the case for your network, you must configure your NETINFO file. (For more information, refer to [Appendix B, “The NETINFO file”](#).)

Using FirstClass with a token ring network

Although the FirstClass Server does not support token ring connections, you can enable client computers connected to a token ring network to connect to the FirstClass Server. To do so, connect the Ethernet card in the FirstClass Server to a router that can route packets from Ethernet to token ring. You can use the router built into the NetWare server to do the routing or, for higher performance, you can use a third-party router, such as a Cisco router.

Setting up modem sessions

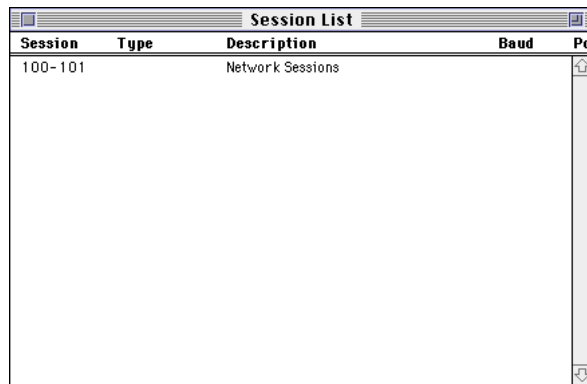
To allow users to dial in to your FirstClass Server, you must configure one or more modem sessions. By default, FirstClass Servers support up to two modem sessions. (You can purchase the optional Four Remote Session Upgrade to increase the number of remote sessions supported by your server. SoftArc also offers serial expansion cards you can use to increase the number of communication ports on your computer.)

Note: The FirstClass Server requires an additional 100 KB of memory for each modem session you configure.

Before configuring a modem session, ensure that you have the necessary equipment (refer to [“Assembling the things you need” on page 13](#)). To con-

figure modem sessions, follow these steps for each modem attached to your server.

- 1) Ensure that the modem and modem cable have been installed according to the manufacturer's instructions.
- 2) Test the modem using a terminal emulator. Make sure you can connect to another modem.
- 3) From the FirstClass Tools menu, choose Configure → List Sessions.



Session	Type	Description	Baud	Port
100-101		Network Sessions		

- 4) Choose File → New Session.

Session Information

Protocol:

> Advanced Settings

Set your modem, port and cable options:

Connection

Modem:

Port:

Phone:

Speaker:

Script:

Cable Options

H/W Handshake:

DTR Hangup:

Carrier Detect:

Speed Options

Auto Speed:

Baud Rate:

Session Info

Session ID: Session File Name:

Comment

The Protocol field must be set to Serial.

- 5) Set up the Connection options for the modem session:

Modem: The type of modem to be used for the session. If your modem does not appear in the list, use the Custom Install option to install the Other Modems. The Other Modems folder is installed in the FirstClass Post Office → Server → Modems folder. If your modem isn't there either, check the Conferences → Software Libraries → Modem Settings conference on SoftArc Online.

If you still can't find your modem, contact SoftArc Technical Support. Alternatively, you can try choosing a "compatible" modem with the same speed as your modem. For example, if your modem is a V.32bis modem, select Hayes Compatible 14400. You can also create your own modem setup. (To find out how to create a new modem setup, refer to [Appendix E, "The MDM file format"](#).)

Port: The communication port to which the modem is connected. The list contains all of the available ports on your server computer (including TelePort, Hurdler, and Quadralink ports, if you have installed any optional hardware ports). **Note:** On a Hurdler card, Port #1 is at the top of the card (away from the Nubus connector).

Phone: Whether the modem is connected to a touch tone or pulse line.

Speaker: Whether you want the modem speaker to be turned on or off during dialing and negotiation.

Script: The script file to be used for this connection. Connection scripts are optional and not required for standard modem connections. The list contains all the script files you have created. (For more information, refer to [Appendix F, “Connection scripts”](#).)

6) Set up the Cable Options for the modem session:

Note: The Cable Options are automatically set to the values appropriate for the modem type you selected in [step 5](#). Before changing these fields, refer to your modem documentation.

H/W Handshake: Whether to use hardware flow control. You must select this option if you are using a high-speed modem or a modem that supports data compression or error correction, or both. (For more information, refer to [“Flow control and handshaking” on page 69](#).)

DTR Hangup: Whether to use the Data Terminal Ready (DTR) pin to notify the modem when to hang up a call. (For more information, refer to [“DTR hangup” on page 71](#).)

Carrier Detect: Whether your modem supports carrier detection. SoftArc recommends that you use carrier detection. (For more information, refer to [“Hardware carrier detection” on page 71](#).)

7) Set up the Speed Options for the modem session:

Note: The Speed Options are automatically set to the values appropriate for the modem type you selected in [step 5 on page 26](#). Before changing these fields, refer to your modem documentation.

Auto Speed: Whether FirstClass should automatically set the speed of the communications port to the speed reported in the CONNECT message received from the modem. If you do not select Auto Speed,

FirstClass does not change the port speed. Auto Speed is not recommended for modems with a speed greater than 2400 bps.

Baud Rate: The baud rate at which FirstClass will attempt to make the connection.

- 8) For Session ID, enter the ID number for this session. This number identifies the session in the statistics and log files.

Session File Name displays the name of the file that stores this session's configuration information. FirstClass automatically generates this file name.

Comments displays any comments defined in the MDM file for the selected modem.

- 9) Click Save.

Repeat these steps for each modem connected to your server.

Note: The Advanced Settings option allows you to configure the advanced connection options and the trace options. For information about the advanced connection options, refer to [Appendix D, “Modems: advanced information”](#). For information about trace options, refer to [“Troubleshooting tools” on page 49](#).

After the installation

After installing your server and configuring your server and connections, you should back up your server. Once the backup is complete, you are ready to start the server.

Backing up your server

Once you have installed and configured your server, you should back up the FirstClass Post Office and FirstClass Server folders. Back up the server with any third-party backup utility, or even the Finder. Store the backup in a safe place. (For more information, refer to *Administering FirstClass*.)

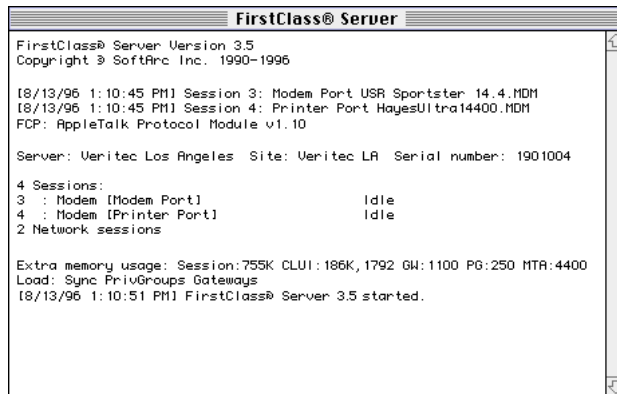
If you have approved additional volumes, you should also back up the FirstClass Post Office folder on each of those volumes. For more information about multi-volume post offices, refer to *Administering FirstClass*.

You should also schedule regular backups, to ensure that you do not lose data because of hardware or other problems.

When the backup is complete, you can start your FirstClass Server.

Starting the FirstClass Server application

Users can connect to a FirstClass system only if the server is running. Before starting the FirstClass Server, ensure that the FirstClass Tools application is not running. Then, double-click the FirstClass Server icon located in the FirstClass Server folder.



Now that your server is running, you are ready to add privilege groups, users, and conferences. For detailed instructions, refer to *Administering FirstClass*.

Upgrading an existing server

If you are installing a new FirstClass Server, you can skip this chapter. If you are currently using FirstClass version 2.7 or earlier, you must upgrade your FirstClass post office before installing the new version of FirstClass. To do so, you use the FirstClass Post Office Upgrader (PO Upgrader).

This chapter explains how the PO Upgrader works. It also explains how to install the software, prepare for the post office upgrade, run the PO Upgrader, and set up the new server.

How the PO Upgrader works

The PO Upgrader runs in two phases.

- 1) **Scanning phase** scans each post office volume, counting all files to be upgraded.
- 2) **Conversion phase** scans each volume again, upgrading the files.

The upgrade can take a long time. For example, upgrading a FirstClass post office with 120,000 files can take from six to eight hours.



Warning: The PO Upgrader is not a repair tool. It cannot detect and rectify problems caused by the Macintosh file system, such as corrupt data inside files. If you have been experiencing unexplained crashes on your FirstClass Server, or if you suspect that the data in your current post office is corrupt, do not upgrade your post office until the problem is rectified.

Limitations

The PO Upgrader performs most of the difficult upgrade tasks for you. However, you should be aware of its limitations.

- It cannot upgrade the following items:
 - read-only volumes
 - external links to hard disks, CD-ROMs, and so on
 - backups of your FirstClass Directory (Old OrgDir) and Post Office Maps

These are not required by the converted post office.

- It does not preserve customized help documents.
- It cannot merge multiple post office volumes into one.
- It cannot upgrade multiple servers at once, or merge multiple servers into one.
- It cannot upgrade Communications Toolbox sessions.

Preparing for conversion

Preparing for conversion involves the following tasks:

- [selecting an upgrade option](#)
- [assembling the things you need](#)
- [preparing the server](#)
- [installing the upgrade software](#)

If you are not performing an in-place conversion, you must also prepare the destination computer.



Warning: Prepare carefully, because you cannot abort the upgrade process cleanly once it has begun.

Selecting an upgrade option

You can perform the upgrade in the following ways.

- You can perform the complete upgrade in place, replacing your existing post office with the upgraded post office. SoftArc recommends that you do not do an in-place conversion, because an in-place conversion is harder to back out of if something goes wrong.
- You can store the upgraded post office volumes on the same computer, or on another computer connected to the FirstClass Server computer by network. If you choose this option, ensure that you have enough free disk space. To determine how much you need, multiply the size of the

existing post office by 120%. Also, ensure that the number of files on each volume will not exceed 32,000.

Assembling the things you need

To convert your files, you need the following equipment:

- a FirstClass system running on a Macintosh
- the FirstClass upgrade software

If you are not doing an in-place conversion, you also need a volume with enough space to store the converted post office.

Preparing the server

To prepare your FirstClass Serve, follow these steps.

- 1) If you have modified the CLUI Welcome message or any of the Help documents, copy and paste the modifications into a FirstClass message. After conversion, you can paste the modifications from the converted message into the updated Help documents.
- 2) Ensure that the admin user ID for your system is “admin”, and that the FirstClass Post Office → UserDir folder contains an Admin folder (this folder contains the administrator’s desktop). If it does not, contact the Migration Specialist in SoftArc Technical Support for further instructions.
- 3) Ensure that the following folders appear on the administrator’s desktop:
 - Privilege Groups
 - Gateways
 - Multi-Site Setup

If any of these folders is missing, contact the Migration Specialist in SoftArc Technical Support for additional instructions.

- 4) Ensure that the following folders appear on the administrator's desktop:
 - Conferences
 - Private Conferences
 - News
 - Help
 - CLUI Help

If you have renamed any of these folders, change their names back to the original name. (For example, if you renamed “Conferences” to “Veritec Conferences”, change its name back to “Conferences”.) After restoring the original names, create any folders that are missing.

- 5) Ensure that all volumes to be upgraded are approved.
- 6) Unapprove any read-only volumes, including CD-ROMs.
- 7) Perform a trash collection.
- 8) Shut down the FirstClass Server.
- 9) Perform a full backup of your old FirstClass post office, including all approved volumes. Follow the instructions in *FirstClass Administrator Manual*, version 2.5.
- 10) Ensure that file sharing is not enabled on the computer running the PO Upgrader.
- 11) To ensure data integrity, check all approved volumes with a utility such as Norton Utilities.



Warning: When using Norton Utilities, do not fix files that start with a period. Doing so can lead to corrupted data.

- 12) Back up the FirstClass Server folder.

Preparing the destination computer

If you are not doing an in-place conversion, check the hard drives on which you will be saving the upgraded post office. Use a utility like Norton Utilities.

Installing the upgrade software

To install the upgrade software, follow these steps.

- 1) Insert the FirstClass 3.5 CD-ROM in a CD-ROM drive. The FirstClass 3.5 icon appears on your desktop.
- 2) Open the FirstClass Server folder.
- 3) Double-click Existing FirstClass Server. The splash screen appears.
- 4) Click Continue until the Existing FirstClass Server window appears.



- 5) To install the software on a different volume, click Switch Disk and select the volume.
- 6) Click Install.
- 7) When the install is complete, click Quit.

The installation program creates a folder, at the root of the selected drive, called FirstClass Upgrader, containing two applications, the PO Upgrader and the Server Upgrader.

The CLUIFiles and Help folders contain the latest help documents. Do not delete or modify any files in these folders before running the upgrade.

Performing the upgrade

Performing the upgrade involves the following tasks:

- [running the upgrade](#)
- [checking upgrade information](#)

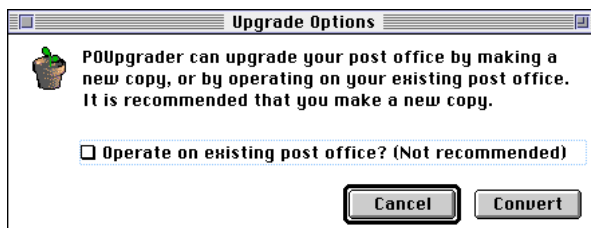
Running the upgrade

To perform the upgrade, follow these steps.

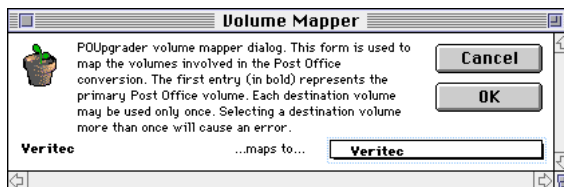


Warning: Do not run other programs while the PO Upgrader is running. You should also turn off any controls panels and extensions you don't need.

- 1) Ensure that you have completed all the steps in [“Preparing for conversion” on page 32](#).
- 2) Ensure that all the volumes to be upgraded are mounted on your Macintosh's desktop.
- 3) Ensure that the FirstClass Upgrader folder is on a volume with enough space for the PO Upgrader Log file and the Volume Map file. Although the space required can vary widely depending on your system, 2 MB is usually adequate.
- 4) For best performance, allocate as much memory as possible to the PO Upgrader application. To allocate memory, select the application icon and choose File → Get Info. For Preferred Size, specify the amount of memory you want to allocate to the application.
- 5) Double-click POUprader to run it.



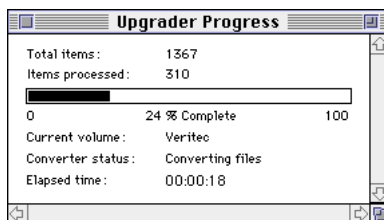
- 6) SoftArc recommends that you keep the original post office. However, if you want to perform an in-place conversion (replacing the existing post office with the upgraded one) select Operate On Existing Post Office. Skip to [step 9 on page 37](#).
- 7) Click OK.



Note: The Master Volume should be the first entry (shown in bold). If it isn't, contact the Migration Specialist in SoftArc Technical Support.

- 8) For each volume in the Macintosh server, select the appropriate destination volume. By default, each volume maps to the same volume, and the PO Upgrader creates the new post office on the same volume as the old one.
- 9) Click OK.

The Upgrader Progress status bar displays the progress of the upgrade.



When the upgrade is complete, the Exit Upgrader dialog appears.



10) Click OK.

Unless the number of error and warning messages is very high, don't worry about unreferenced files and corrupt objects—the PO Upgrader cleans these up. If the number of unreferenced files exceeds 2% of the total files in your post office, install the new FirstClass Server and test the upgraded post office. If the new server does not run properly, contact the Migration Specialist in SoftArc Technical Support.

Checking upgrade information

The Upgrader Progress window displays information on the progress through each of the two phases of the upgrade. The PO Upgrader also stores additional information in the PO Upgrader Log file.

You should check this file after each upgrade run. The file is located in the FirstClass Upgrader folder.

Installing the upgraded server

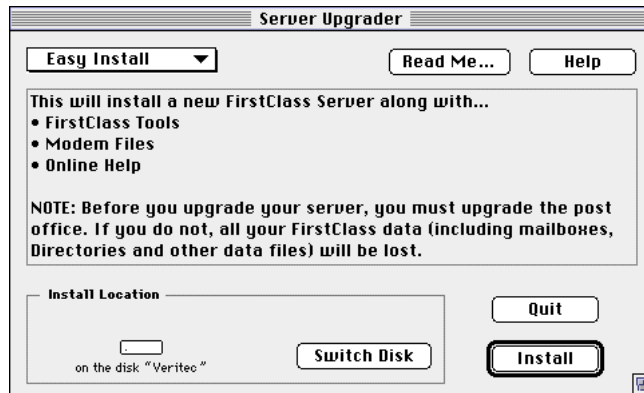
When the PO Upgrader has finished running, follow these steps.



Warning: Do not skip [step 10](#). If you do, the FirstClass Server application will not run.

- 1) Before proceeding, back up the folder containing the upgraded post office. You can back up the converted post office using the Finder or any third-party backup utility.
- 2) If the upgraded post office is not on the computer on which you will be running the new FirstClass Server, copy it to this computer.

- 3) Open the FirstClass Upgrader folder.
- 4) Double-click Server Upgrader.
- 5) Click Continue until the Server Upgrader window appears.



- 6) To install all required FirstClass components, click Install. The program installs the FirstClass Server and notifies you that the installation is complete. Skip to [step 8](#).
- 7) To install selected components, select Custom Install. Select the components you want to install, and click Install. The program installs the FirstClass Server and notifies you that the installation is complete.
- 8) Click Quit.
- 9) Delete the old versions of the FirstClass Server and Tools applications.



Warning Never run the old version of FirstClass Tools against the upgraded post office. The post office will be damaged.

- 10) From the FirstClass Tools version 3.5 menu, choose File → Rebuild User Directory to rebuild the FirstClass Directory. Rebuild the Directory with **none of the checkboxes selected**.
- 11) Reconfigure Communications Toolbox sessions.

- 12) Verify modem sessions (especially if you customized the modem resources).
- 13) Back up the new server (refer to [“Backing up your server” on page 29](#)).
- 14) Start the new server (refer to [“Starting the FirstClass Server application” on page 29](#)).
- 15) Log into the FirstClass Server as the administrator, and add the following privilege groups to the Privilege Groups folder:
 - DOS Users
 - Offline Users

Troubleshooting

This chapter provides instructions for troubleshooting problems with license diskettes and modem and network sessions. It also describes useful troubleshooting tools and provides information about SoftArc's support.

Troubleshooting license diskette problems

FirstClass license diskettes are in a special format that can only be used in FirstClass Tools. They are not in a standard diskette format, so you cannot duplicate them. This section lists problems that you might encounter when working with license diskettes, suggests possible causes, and recommends actions.

This disk is unreadable by this Macintosh

If you insert a license diskette into a disk drive when FirstClass Tools is not open, the following dialog appears.



Click Eject. Open FirstClass Tools and follow the procedure in [“Licensing the server” on page 17](#).



Warning: If you click Initialize, your license diskette will be destroyed.

This diskette is not a valid FirstClass upgrade diskette

If FirstClass Tools cannot read the license diskette, it displays the following message.



This error occurs if the diskette is damaged or an old version, or if the disk drive is damaged. To troubleshoot the problem, follow these steps.

- 1) Check the disk drive by inserting and browsing another high-density diskette.

Note: If the disk drive doesn't support high-density diskettes, contact SoftArc Customer Service at 905-415-7000 to obtain a low-density diskette.

- 2) Try to license the server over the network.
 - a. Set up file sharing on the server computer so that you can access its hard drive from a second computer (one with an operational disk drive).
 - b. Run FirstClass Tools from the second computer, and license the server following the steps in ["Licensing the server" on page 17](#).
 - c. Turn off file sharing.
- 3) If you cannot license the server on the second computer, contact SoftArc Technical Support to obtain a replacement license diskette.

Note: If the warranty period for the diskette has expired, SoftArc will charge a nominal replacement fee.

Troubleshooting problems with network sessions

Before you troubleshoot problems with a network session, you should understand how network sessions are established. This section describes this process. It also lists reasons why clients might not be able to connect to the server.

How a network session is established

Each computer connected to a network has an address. Depending on the networking protocol you use, this address might be generated automatically during installation of the networking software, or defined by the user.

When a user attempts to log into FirstClass from a computer connected to the network, the following events occur.

- 1) The user's computer determines the address of the login port on the FirstClass Server specified in the user's settings document. (The actual mechanism for determining this address depends on the networking protocol used.)

Note: In some protocols, ports are referred to as “sockets”.

- 2) The user's computer sends a connection request packet to the connection port. The packet contains no login data, just a request for connection.
- 3) The FirstClass Server's connection port determines whether any network sessions are available. If a session is available, it returns a packet that gives the address of the FirstClass Protocol (FCP) port on the server. (If no sessions are available, it generates an error message.)
- 4) The user's computer sends a login packet to the FCP port. This packet includes the user's ID and password.
- 5) The server verifies the ID and password. If they are valid, and the user is not already logged in, a session begins.

FirstClass Server freezes during startup

This problem occurs if you have installed the MacIPX control panel. This control panel is not necessary for FirstClass, and may cause problems with IPX connections.

Clients cannot connect to the server

This problem can have the following causes.

- The server is not running. To start the server, refer to [“Starting the FirstClass Server application” on page 29](#).
- The settings document is incorrectly configured (for example, the server name is wrong). To assign the server name, refer to [“Naming the server” on page 19](#). To configure the server name in the FirstClass settings document, refer to *Using FirstClass*.
- All sessions are in use. If this occurs, you might need to define more sessions. For more information, refer to [“Setting up network sessions” on page 22](#).
- The NIC is configured incorrectly, or the NIC or cable is defective.
- The network contains one or more bridges. When addresses are transferred from one network to another over a bridge, errors can occur if the bridge translates the server’s address into another form.

For example, suppose the client and the server are on different networks. The server sends the client the address of the FCP port. The bridge translates the sender’s address in the protocol header, but does not know that some of the data represents the server’s address, so it does not know that it also requires translation. The client attempts to send a packet to the *real* server port, but it does not reach the server because the address is not valid on the client’s network, even to the bridge, where the *translated* address is required. If this problem occurs, consider replacing your bridge with a router.

Communication link errors

The error 1027 (Comm Link Failure) can have the following causes.

- The settings document is incorrectly configured.
- The user is running FirstClass in the background and the application running in the foreground is using too much processing time, and causing the link to fail.
- For IPX sessions, the network software is loaded incorrectly, or the network card is incorrectly configured.
- For TCP/IP sessions, the TCP/IP protocol is loaded incorrectly, or some of the advanced settings (such as encryption or buffer size) need to be adjusted.

Troubleshooting problems with modem sessions

Before you troubleshoot problems with a modem session, you should understand how the server interacts with a modem. This section explains this interaction. It also lists errors that might be reported by the server and, for each one, suggests possible causes and recommends actions.

How the modem and server interact

Every modem must be connected to a phone line, a communications port on the server, and (for external modems) a power supply. For each communications port, the FirstClass Tools application maintains modem setup information for the modem connected to that port.

Communications between the modem and server involve the following events.

- 1) When the server starts up, it sends the Reset string to each modem. It waits for the Short Timeout period for an OK response from the modem. If it does not get this response, it attempts to wake up the modem.

All the strings discussed in this section are defined in the MDM file. For information about this file, refer to [Appendix E, “The MDM file format”](#).

- 2) When the server receives the OK response, it sends the Initialization string and waits for an OK.
- 3) If any optional settings (such as Speaker, H/W Handshake, DTR Hangup, or Carrier Detect) are set in the Session Information dialog, the server sends the Option string to the modem, and waits for an OK.
- 4) The server waits for the modem to generate a RING response. (This occurs when a remote modem calls in.) When it receives this response, it sends the Answer string, which answers the call and puts the modem into the online state.

Note: The server does not use the Auto-Answer mode supported by many modems. Because the server does not use Auto-Answer, the modem will not answer the phone if the server is not active. This ensures that users will not be billed for calls when the server is not available.

- 5) The server's modem negotiates with the other modem to determine a baud rate to use for the connection.
- 6) If the server's modem is able to negotiate a connection, it generates a CONNECT response and the server waits for a login message. If the Auto Speed parameter is enabled (refer to [page 27](#)), the server adjusts the port speed to the speed specified in the CONNECT message.

Note: To configure the amount of time that the server waits for the login message, change Drop Modem Calls If No Response After in the System Profile. (For detailed instructions, refer to *Administering FirstClass*.)

- 7) If the modem cannot negotiate a connection (for example, if the call was a wrong number), it generates a NO CARRIER response and the server reports a No Carrier incident in the log file.

No response from modem

The message “no response from modem” can have the following causes.

- The modem is not turned on.
- The modem is not connected to the correct communications port.
- The modem cable is not connected properly, or it is defective.
- The baud rate selected on the Session Information form is inappropriate for this type of modem.
- Hardware handshaking is enabled (refer to [page 27](#)), but your modem cable does not support hardware handshaking. Select a modem without hardware handshaking, or obtain the correct cable.
- The modem has crashed. Turn the modem off, wait a few seconds, and turn it back on.

Modem returned error

The message “modem returned error” can have the following causes.

- The modem selected in the Session Information form is the wrong type. (Refer to [“Setting up modem sessions” on page 24.](#))
- The modem’s Reset or Initialization string is incorrect. This error occurs if the wrong modem is selected on the Session Information form or if the MDMRESET or MDMINIT parameters in the MDM file contain invalid commands.

To find out whether the MDM file contains invalid commands, use the server diagnostics tool (refer to [“Troubleshooting tools” on page 49](#)) to monitor the commands being sent to the modem. Consult the modem documentation to determine whether the commands contain errors.

To test the commands, use a terminal emulator to communicate directly with the modem. Type each command and press Return. Ensure that the modem returns the response “OK” after each command.

If you can't resolve the problem, try selecting the "compatible" modem with the same speed as your modem. For example, if your modem is a V.32bis modem, select Hayes Compatible 14400.

If the errors continue, contact SoftArc Technical Support.

No Carrier

If your server reports "No Carrier", it was unable to negotiate a connection with the remote modem. Use the server diagnostics tool (refer to ["Troubleshooting tools" on page 49](#)) to check your Initialization string.

No response... disconnecting

If your server reports "No response... disconnecting," it successfully negotiated a connection with the remote modem, but the server never received data from the remote modem. This message might indicate a handshaking problem on the part of either your modem or on the remote modem. (To find out how to set up handshaking, refer to [page 27](#).) The message can also occur when a user of a VT100-compatible or ANSI-compatible terminal emulator is dialed in but does not enter commands for several minutes.

Communication link failure

If your server reports a communication link failure, it successfully negotiated a connection with the remote modem and transferred at least one unit of information to the server successfully. However, it is no longer receiving data. If this problem occurs, try the following actions.

- Use the server diagnostics (refer to ["Troubleshooting tools" on page 49](#)) to check the Initialization string.
- Find out what other programs and gateways are running on the server. Terminate each program, one at a time, to find out if any are conflicting with the server.

Note: Fax/modem software often conflicts with the server.

If carrier detection is not enabled, communication link failures can result when the client disconnects suddenly (for example, if the client's modem is turned off).

Modem has dropped the connection

If your server reports “Modem has dropped the connection”, the client disconnected suddenly (for example, the client modem was turned off). Make sure that your modem cable supports carrier detection. If it does not, disable carrier detection. (For detailed instructions, refer to [page 27](#).)

Note: SoftArc recommends that you replace the modem cable with a cable that does support carrier detection.

Link dropped

If your server reports “Link dropped”, the server lost the connection while waiting for the first complete unit of information. This error occurs if hardware handshaking is set up incorrectly on either the server’s end or the remote modem’s end. Make sure that hardware handshaking is set up correctly on your modem, and that your modem cable supports hardware handshaking. Contact the user of the remote modem to make sure handshaking is set up correctly on that modem.

Troubleshooting tools

The following tools are available on the server for troubleshooting problems with modem sessions:

- server diagnostics
- trace information

Server diagnostics

You can configure the server to report the following information:

Modem Strings: All commands sent by the server to the modem, and all responses sent from the modem to the server. To enable this option, from the FirstClass Server application menu, choose Diagnostics → Packet Debug Messages → Modem Strings.

Packet Errors: All errors the FirstClass software encounters. To enable this option, from the FirstClass Server application menu, choose Diagnostics → Packet Debug Messages → Packet Errors.

Statistics Report: All errors occurring in a session (reported at the end of the session). To enable this option, from the FirstClass Server application menu, choose Diagnostics → Packet Debug Messages → Report Statistics.

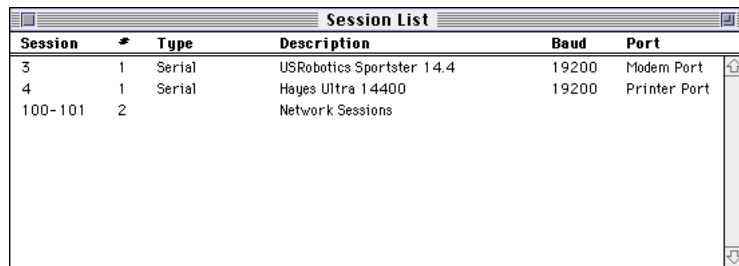
Debug information appears in the server log window, but it is not saved in the server log files. To save the diagnostics output to a file, choose Diagnostics → Console to File.

Keep in mind that you may need help from SoftArc Technical Support to interpret the information provided by the server diagnostics. For more information, contact SoftArc Technical Support.

Trace information

You can configure your modem session to log detailed trace information. To do so, follow these steps.

- 1) From the FirstClass Tools menu, choose Configure → List Sessions.



Session		Type	Description	Baud	Port
3	1	Serial	USRobotics Sportster 14.4	19200	Modem Port
4	1	Serial	Hayes Ultra 14400	19200	Printer Port
100-101	2		Network Sessions		

- 2) Double-click the session you want to change.

Session Information

 Protocol:

 > Advanced Settings

 Set your modem, port and cable options:

Connection

Modem:

Port:

Phone:

Speaker:

Script:

Cable Options

H/W Handshake:

DTR Hangup:

Carrier Detect:

Speed Options

Auto Speed:

Baud Rate:

Session Info

Session ID:

Session File Name:

Comment

Cancel

Save

3) Click Advanced Settings.

Session Information

 Protocol:

 > Advanced Settings

Trace: ☐ Receive ☐ Send ☐ Errors

☐ Connect ☐ Modem/Scripts

Window: Lock:

Packets: Encrypt:

 Set your modem, port and cable options:

Connection

Modem:

Port:

Phone:

Speaker:

Script:

Cable Options

H/W Handshake:

DTR Hangup:

Carrier Detect:

Speed Options

Auto Speed:

Baud Rate:

Session Info

Session ID:

Session File Name:

Comment

Cancel

Save

4) In the Trace section, select the types of information you want to record in the server log:

Receive: All packets received.

Send: All packets sent.

Errors: All packet errors.

Connect: Connection messages.

Modem/Scripts: Modem and scripting commands.

- 5) Click Save.

Before you contact Technical Support

If you have problems installing or using your software, contact your authorized FirstClass reseller or SoftArc Technical Support.

However, there are several things you should do first. Some of these may help you resolve the problem on your own; if they don't, they will provide us with excellent information when you do call.

- 1) Check this manual, your modem manual, or any other appropriate manual.
- 2) Check other information sources, such as ReadMe files and the FAQ and Tech Notes conferences on the FirstClass CD-ROM and SoftArc Online.
- 3) Try to duplicate the problem. If it recurs, make a note of the steps that cause it to happen.
- 4) Try to isolate the problem. For example, if users can't connect to the server using modem sessions, find out if they can connect using network sessions.
- 5) Try to identify anything that has changed since the last time the system worked correctly.
- 6) If you are having trouble with a modem session, confirm that your modem, phone line, and modem cable are working by trying another communications application. Can you access another computer or server on the network? Also, try resetting the modem.
- 7) Try restarting the FirstClass Server or the server computer.

- 8) Check the log files and increase the log level if necessary. For more information about the log files, refer to *Administering FirstClass*.
- 9) Gather the following information for Technical Support:
 - FirstClass Server serial number, name, site name, and version number

To display the version number, choose About FirstClass Server from the Apple menu.

- the name, manufacturer and version of the server computer and any other hardware and software that you are using on it, including the operating system, the modem, and the network hardware
- screen snapshots of any error messages that appear, and information about what the system was doing just before they appeared

Print screen shots in black and white, unless color is important. Only print the part of the screen containing the error message. To take a snapshot of a screen, press Shift+Command+3. The current screen is saved to a file called Picture <n>, where <n> is a number from one to ten. You can open this file with SimpleText and print it.

- printouts of your log files

For more details on these suggestions, as well as many other useful tips, refer to Conferences → Technical Support → FAQs, or Conferences → Technical Support → Tech Notes, on SoftArc Online.

Contacting Technical Support

SoftArc provides free technical support to its registered users. (If you haven't registered yet, refer to your *Getting Started* card.) For support, contact your local SoftArc reseller. Alternatively, you can contact SoftArc directly in any of the following ways.

Through SoftArc Online

SoftArc Online is SoftArc's 24-hour FirstClass service. You will find it to be a very useful resource since, in addition to putting you in contact with our support staff, it allows you to share information and ideas with thousands of other people using FirstClass products.

Using the FirstClass Client, you can connect to SoftArc Online in two ways:

- **By modem:** The FirstClass Client ships with a settings document that is configured to connect to SoftArc Online by modem. The phone number for SoftArc Online is 905-415-7070.
- **Over the Internet:** For customers with connections to the Internet, the FirstClass Client ships with a settings document that is configured to connect to SoftArc Online using the TCP/IP protocol. SoftArc Online uses port 510, and its IP address is 198.133.37.10.

You can also connect to SoftArc Online with any VT100- or ANSI-compatible terminal emulator. Configure the application to use 8 data bits, no parity, 1 stop bit, and a speed of up to 28800 bps. Use the application to dial 905-415-7070. Although you won't see the friendly FirstClass Client interface, you will be able to contact a support specialist.

Address your support questions to SoftArc Support.

By fax

You can fax your support questions to SoftArc Technical Support: 905-415-7188.

By Internet mail

If you have access to Internet mail, you can contact us at support@softarc.com or (for sales information) at sales@softarc.com.

By telephone

If you'd prefer to talk directly to someone in our Technical Support department, call SoftArc at 905-415-7144. We're open from Monday to Friday, 9 A.M. to 6 P.M., Eastern Standard Time.

By mail

You can also contact us by mail. Send your letters to the following address:

SoftArc Inc.
Technical Support
100 Allstate Parkway
Markham, Ontario, Canada
L3R 6H3

The FirstClass folders

The installation process creates the following folders: FirstClass Post Office, FirstClass Server, and Other Modems.

The FirstClass Post Office folder

This folder contains the FirstClass post office—the repository of all FirstClass data, including messages, files, and the FirstClass Directory.



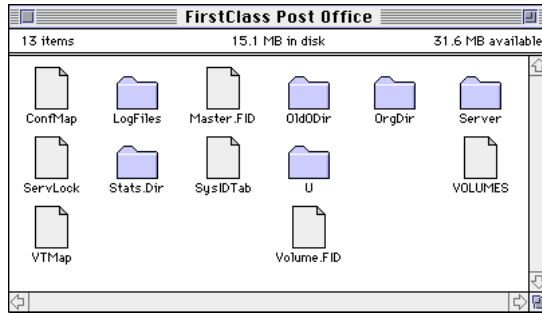
Warning: It is vital that you maintain the integrity of the FirstClass Post Office folder.

- Do not rename it.
- Do not move it to a different volume unless you also move the FirstClass Server folder to the same volume.
- Do not move it from the root of the volume on which it is located.
- Do not change, delete, or move anything other than the log files, statistics files, NETINFO file, modem definition (MDM) files, database extension files, or connection scripts.
- Do not add files or folders to any subfolders of the FirstClass Post Office folder, unless instructed to do so.
- Do not attempt to merge multiple FirstClass Post Office folders into a single folder.

If you make changes to the post office, other than the permissible changes described in the preceding list, the FirstClass Server may not start, or it may damage its data files. To start the server, reverse the changes.

If you change or delete files in the post office, or if you add any files, the post office might be damaged. Should this happen, restore or re-install your server.

When you look at the FirstClass Post Office folder, you see a structure similar to that shown in the following illustration.



LogFiles

This folder contains the FirstClass Server log files. The server creates a log file for each day it is running. Log file names take the form <yymmdd>. For example, the log file for September 30, 1996 would be named 96SEP30. You should delete these log files regularly, to free up disk space. SoftArc suggests you back up the log files before you delete them, however, in case you need them to troubleshoot an ongoing problem.

Server

This folder contains support files for the FirstClass Server as well as the following folders.

DBEXT contains any database extension Dynamic Link Libraries installed on the FirstClass Server. When you install your server, this folder is empty.

Modems contains the modem definition (MDM) files. For more information about MDM files, refer to [Appendix E, "The MDM file format"](#).

Ports contains the session configuration files for the modem ports on the server.

Scripts contains the connection script files. For more information about these files, refer to [Appendix F, "Connection scripts"](#).

Stats.Dir

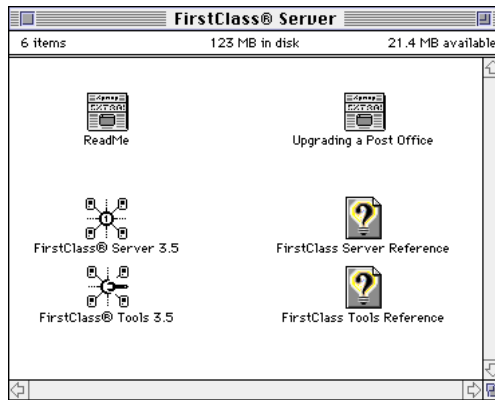
This folder contains the statistics files. You can configure the server to maintain statistics files (for more information, refer to *Administering FirstClass*).

Statistics file names take the form <yymmmdd>.TXT. For example, the statistics file for the period beginning October 1, 1996 would be named 96OCT01.TXT.

By default, statistics files are stored in standard, comma-delimited format, so you can import them into a spreadsheet or database program for processing. For information about the format of the statistics file, refer to *Administering FirstClass*.

FirstClass Server folder

This folder contains the FirstClass Server and FirstClass Tools applications, and all supporting files. When you look at the FirstClass Server, you see a structure similar to that shown in the following illustration.



This folder contains the following files:

FirstClass Server is the FirstClass Server application.

FirstClass Tools is the application you use to license your server, configure your server, and configure sessions.

ReadMe is a text file containing documentation changes and last-minute information about the FirstClass Server. SoftArc recommends that you read this file before starting your server.

Upgrading a Post Office is a text file containing instructions for upgrading a FirstClass 2.7 post office, as well as information about the Post Office Upgrader.

FirstClass Server Guide is the Apple Guide help for the FirstClass Server application.

FirstClass Tools Guide is the Apple Guide help for the FirstClass Tools application.

Other Modems folder

SoftArc has developed an extensive set of modem definition (MDM) files, which require a significant amount of disk space for storage. Therefore when you install the FirstClass Server, only the most commonly used modem files are installed. Optionally, you can install additional modem files, using the Custom Install option of the installation program. These files are written to the FirstClass Post Office → Server → Modems → Other Modems folder. (For an even more up-to-date list of modem definition files, check Conferences → Software Libraries → Modem Settings on SoftArc Online.)

The NETINFO file

The NETINFO file allows you to configure IPX and TCP/IP connections. (To enable IPX connections, you must install the Windows Services module. To enable TCP/IP connections, you must install the TCP/IP Services module.) The file is located in the FirstClass Post Office → Server folder. You can use SimpleText, TeachText, or any text editor to view it. The file can contain the following parameters.

Note: The parameters must be entered in upper case, with spaces before and after the equal signs.

IPX

Disables or enables the IPX protocol.

Syntax

IPX = <n>

where <n> can be either “0” (to disable the protocol) or “1” (to enable it).

Default

IPX = 1

Example

IPX = 0

IPXAUTO

Disables or enables automatic frame detection. If automatic frame detection is enabled, when the server receives a packet with a given frame type, it automatically begins broadcasting packets of that type. You can disable this feature, explicitly specifying the frame types to be broadcast by the server.

If you turn off automatic frame detection, you must supply one or more of the explicit frame parameters (IPXNET8022, IPXNETENII, IPXNET8023, or IPXNETSNAP), and you must specify the network number with the IPXNETWORK parameter. The IPXNETWORK parameter is used for any frame types that are not explicitly defined with one of these parameters.

Syntax

IPXAUTO = <n>

where <n> can be either “0” (to disable the automatic frame detection) or “1” (to enable it).

Default

IPXAUTO = 1

Example

IPXAUTO = 0

IPXNET8022

Specifies the network number for packets with the 802.2 frame type.

Syntax

IPXNET8022 = <n>

Default

The value specified for IPXNETWORK.

Example

IPXNET8022 = FC000001

IPXNET8023

Specifies the network number for packets with the 802.3 frame type.

Syntax

IPXNET8023 = <n>

Default

The value specified for IPXNETWORK.

Example

IPXNET8023 = FC000002

IPXNETENII

Specifies the network number for packets with the Ethernet_II frame type.

Syntax

IPXNETENII = <n>

Default

The value specified for IPXNETWORK.

Example

IPXNETENII = FC000003

IPXNETWORK	Specifies the IPX network number for SAP packets, in hexadecimal notation. Specify 0 for "this network". Most routers will translate the 0 to the appropriate number when routing packets to another network. Syntax IPXNETWORK = <n> Default IPXNETWORK = 0 Example IPXNETWORK = FC000005
IPXNETSNAP	Specifies the network number for packets with the Ethernet_SNAP frame type. Syntax IPXNETSNAP = <n> Default The value specified for IPXNETWORK. Example IPXNETSNAP = FC000004
TCPGUIPORT	Sets the port number of the main port that accepts connections from users of the FirstClass Clients for Mac OS and Windows who are connecting with TCP/IP. Connections through this port do not use the error correction component of the FirstClass Protocol (FCP), because the TCP/IP protocol handles error correction. Syntax TCPGUIPORT = <port#> Example TCPGUIPORT = 510 Recommended value 510 This is the standard FCP port.

Default

3000

If you don't specify a TCPGUIPORT, the default (3000) is used, to allow existing systems continue to operate without intervention.

Notes:

- The TCPGUIPORT accepts connections over network and remote sessions.

The number of network sessions the port can support is determined by the number of network sessions you configure on your server. (For information about configuring network sessions refer to [“Setting up network sessions” on page 22.](#))

The number of remote sessions the port can support is determined by the number of surplus remote sessions in the server. (Surplus remote sessions are those remote sessions that are not being used for a modem connection.) The basic FirstClass Server comes with two remote sessions. You can install additional remote sessions with one or more Four Remote Session upgrades.

- To accept TCP/IP connections from users of the FirstClass Client for Windows, the FirstClass Server must have the Windows Services license installed.
- If your server has the Text Services license, users of terminal emulators can connect to this port by pressing Return twice.
- Users who auto-register on any port other than ports 3002 and 3004 are defined as regular users.

TCPGUIPORT2

Creates an optional, additional port for users of the FirstClass Clients for Mac OS and Windows who are connecting with TCP/IP. Connections through this port do not use the error correction provided by the FirstClass Protocol (FCP).

If you omit this parameter, the server only monitors the main TCPGUI port.

Syntax

TCPGUIPORT2 = <port#>

Example

TCPGUIPORT2 = 3000

Recommended value

3000

Default

None

Notes

- This port accepts connections over network and remote sessions.

The number of network sessions the port can support is determined by the number of network sessions you configure on your server. (For information about configuring network sessions, refer to [“Setting up network sessions” on page 22.](#))

The number of remote sessions the port can support is determined by the number of surplus remote sessions in the server. (Surplus remote sessions are those remote sessions that are not being used for a modem connection.) The basic FirstClass Server comes with two remote sessions. You can install additional remote sessions with the Four Remote Session upgrade.

- To accept TCP/IP connections from users of the FirstClass Client for Windows, the FirstClass Server must have the Windows Services license installed.

- If your server has the Text Services license, users of terminal emulators can connect to this port by pressing Return twice.
- Users who auto-register on any port other than ports 3002 and 3004 are defined as regular users.

TCPCLUIPORT

Sets the port number of the TCP/IP port that accepts connections from users connecting to the FirstClass Server with a terminal emulator. (This port does not accept connections from the FirstClass Clients for Mac OS or Windows.)

Syntax

TCPCLUIPORT = <port#>

Example

TCPCLUIPORT = 23

Recommended value

23

Default

3003

If you don't specify a TCPCLUIPORT, the default (3003) is used, to allow existing systems continue to operate without intervention.

Notes

- To accept connections from users of VT100- or ANSI-compatible terminal emulators, the FirstClass Server must have the Text Services license installed.
- Connections to this port are immediate; users do not need to start their sessions by entering Return twice.
- This port supports the telnet protocol and telnet negotiation.

- This TCPCLUI port handles line terminators differently from the standard CLUI. Normally, only a CR is accepted as a line terminator in the CLUI. The TCPCLUI port, however, also accepts CRLF and CRLFNULL as acceptable end-of-line terminators. If you are using a terminal scripting program, it should pause at least 10 milliseconds (ms) after sending a line terminator.

TCPFCPPORT

Creates an optional port for use with a terminal server. The terminal server has a TCP/IP connection to the FirstClass Server; therefore, this connection does not require error correction. The connection between the FirstClass Client and the terminal server, however, passes through a modem and over the telephone lines. Therefore, it requires error correction. A TCPFCP port uses the FirstClass Protocol (FCP) to guarantee the integrity of the information passing between the FirstClass Client and the TCP/IP terminal server.

If you omit this parameter, no TCPFCP port is created.

Syntax

TCPFCPPORT = <port#>

Example

TCPFCPPORT = 3002

Default

None

Recommended value

3002

Notes

- This port accepts connections only from users connecting with a remote session. Thus the number of simultaneous TCP connections the server can support is limited by the number of surplus remote sessions on the server.

- The TCPFCP port runs the full FCP error-correcting sliding window packet link on top of a TCP connection. It is intended for use with connections that are not TCP from end-to-end (for example, when clients dial into a terminal server connected to the FirstClass Server through TCP/IP). For these types of connections, FCP does its own error correction.
- The TCPFCP connection can also be used to handle users connecting with a Communications Toolbox TCP/IP tool such as the Outland TCP Tool.
- If you are running a terminal server, you must configure it to automatically connect to the FirstClass Server on the TCPFCP port after it answers an incoming call.
- Users who auto-register on port 3002 are defined as remote users.

Modem concepts and standards

This appendix explains some concepts you should understand when selecting, purchasing, and configuring a modem. It also explains and lists some of the standards used.

Modem concepts

This section explains the following concepts:

- flow control and handshaking
- baud rate, or bits per second (bps)
- fall back
- hardware carrier detection
- DTR hangup

Flow control and handshaking

Flow control is the method the modem uses to control the quantity of data the computer sends to the modem. It ensures that data is not lost as a result of being sent to the modem faster than the modem can accept it.

Flow control is necessary because the speed at which the computer can send data to the modem may be faster than the speed at which the modem can send data to the remote modem. Most high speed modems can still connect to older, lower speed modems. When they do so, they receive information from the computer at high speed, and send the data out at a lower speed. Therefore, they may have to instruct the computer to slow down periodically.

There are two widely recognized standard methods for flow control: software handshaking (using XON/XOFF) and hardware handshaking (using RTS/CTS).

Software handshaking (XON/XOFF)

You cannot use software handshaking with FirstClass. However, most high speed modems default to XON/XOFF handshaking, as do many other programs. Therefore, you must ensure that any modem setup strings you create do not turn on XON/XOFF handshaking.

Hardware handshaking (RTS/CTS)

If you use a high-speed modem or a modem with error correction or data compression, you must enable hardware handshaking. Hardware handshaking uses the Clear to Send (CTS) and Request to Send (RTS) pins on the modem cable to control data flow. It uses the RTS pin for input handshaking and the CTS pin for output handshaking.

The receiving computer uses input handshaking. When the computer has received as much data as it can handle, it disables RTS. It enables RTS again when it is ready to resume receiving data from the modem.

The sending modem uses output handshaking. When the modem is ready to receive data, it enables the CTS pin and the computer starts transferring data. When the modem has received as much data as it can handle, it disables the CTS pin to inform the computer that the modem buffer is almost full. (A high-speed modem typically contains a small amount of RAM for data buffers.) The computer then suspends data transfer. Once the local modem has emptied its buffer by transmitting data to the remote modem, it enables CTS again.

To use hardware handshaking, you must have a hardware handshaking cable (that is, a cable with pins 4 and 5 enabled at both ends).

Baud Rate or Bits Per Second (bps)

The measure of how fast a modem transfers data. The standard baud rates are 300, 1200, 2400, 9600, 14400, and 28800 bps. The faster the baud rate, the faster the data transfer. If you divide the baud rate by 10, you get a rough estimate of the number of bytes (or characters) transferred per second, and this provides an idea of how long a file transfer will take. For example, a 2400 bps modem can transfer about 240 bytes per second (that is, about 1 KB every four seconds). Therefore, a 25 KB file would take about 100 (25 x 4) seconds to transfer. Obviously, faster speeds are better.

Fall Back

When two modems first connect, they negotiate to find the best communication speed they can both use for the connection. Often this speed is less than the maximum speed supported by one of the modems; in this case, you would say the modem has fallen back to the lower rate. For example, if

modem with speeds of 2400 bps and 9600 bps try to connect with each other, they would negotiate a connection at the speed of 2400 bps. The modem whose speed is 9600 bps would then fall back to 2400 bps.

Hardware carrier detection

The server needs to know when a call has been dropped so that it can terminate the session and initialize the modem to receive another call. Two methods of carrier detection are available.

- The server checks the status of the client every 15 seconds. If the client fails to respond within a minute, the server terminates the session.
- The server monitors the Carrier Detect pin on the modem cable. The modem turns this pin on when it receives a special tone, called the carrier, from the remote modem. When the modem stops receiving this tone, it turns this pin off. When the server detects that the pin has been turned off, it terminates the session.

The first method (checking the client's status) is slow because the server can take more than 60 seconds to determine that a call has been dropped. This method does not work with the Command Line User Interface (CLUI) because the interface does not have client software that can respond to the queries. (The CLUI uses an inactivity timer that monitors the connection. This timer can take several minutes to close a dropped connection.) Also, the timer does not distinguish between dropped calls and communication link failures.

The second method (monitoring the Carrier Detect pin) is faster and distinguishes dropped calls from communication link failures.

To verify that carrier detection has been set up properly, dial in to the server using the client, then physically disconnect the client modem from the phone line. The server should report a 1061 error within a few seconds. If it reports a 1027 error, carrier detection is not set up properly.

DTR hangup

A computer can tell a modem to hang up a call in one of the following ways:

- by sending the Attention string followed by the Hangup string

- by setting the modem up to monitor the Data Terminal Ready (DTR) pin, and then turning the DTR pin off

SoftArc recommends that you do not use the Attention string option because, if the modem speed does not match the computer speed, the Attention string will not be received correctly, and the modem might not hang up. Since speeds can easily get out-of-sync during some negotiations, this is not an uncommon problem.

The DTR pin option is more effective. If you select this option, FirstClass tries to hang up the modem by turning off the DTR pin, waiting for an OK, and sending the Hangup command.

Modem standards

The standards described in this section fall into three categories: standards for modulation (speed), error correction, and data compression. Most modem standards are referred to by a code assigned by the Consultative Committee for International Telephony and Telegraphy (CCITT).



Warning: Avoid modems with proprietary standards for high-speed communication, error correction, or data compression. These features only work when the modems at both ends of the connection support the same standards.

Modulation (speed) standards

Modulation (or speed) standards provide a method of standardizing the rates and ways modems communication with each other, and how they negotiate the best communication speed they can both use for the connection (refer to [“Hardware carrier detection” on page 71](#)). You should be familiar with the following modulation standards:

V.22: The CCITT standard used for data transmission at speeds up to 2400 bps.

HST: The USR proprietary standard used for data transmission at speeds from 9600 to 16800 bps, depending on the model. (The reverse channel is much slower; if connecting to another type of modem, the best speed you can expect is 2400 bps.)

Hayes V-series: The Hayes proprietary standard used for data transmission at speeds up to 9600 bps. (The reverse channel is much slower; if connecting to another type of modem, the best speed you can expect is 2400 bps.)

V.32: The CCITT standard used for data transmission at speeds up to 9600 bps.

V.32bis: The CCITT standard for data transmission at speeds up to 14400 bps.

V.32terbo: The AT&T proprietary standard for data transmission at speeds up to 19200 bps.

V.fc: The Rockwell chip set proprietary standard for data transmission at speeds up to 28800 bps.

V.34: The CCITT standard for data transmission at speeds up to 28800 bps.

Error correction standards

Error correction standards provide a way of correcting errors that result from outside interference, such as noise on the phone line. Error correction ensures that data coming out of the receiving modem is exactly the same as data going into the sending modem. Error correction standards correct only those errors occurring between the two modems—they cannot correct errors occurring between the modem and the computer.

You should be familiar with the following error correction standards:

V.42: The CCITT error correction standard.

MNP Error Control: The Microcom Networking Protocol; an early error correction standard. The V.42 standard is based, in part, on MNP.

Data compression standards

Data compression standards provide a way of compressing data at the sending modem, transmitting it across the modem link in compressed form, and then expanding it at the receiving modem. If the data can be compressed, data compression increases the effective throughput. If the data cannot be compressed (for example, if it has already been compressed with a utility

such as Stuffit, Compact Pro, Disk Doubler, or PKZip), then modems with data compression have little benefit.

You should be familiar with the following data compression standards:

V.42bis: The CCITT data compression standard. It has a theoretical maximum compression ratio of four to one.

MNP Level 5 Compression: The Microcom data compression standard. This standard, part of the V.42bis standard, has a lower maximum compression ratio (two to one). MNP 5 actually slows down the transfer of already compressed files.

Modems: advanced information

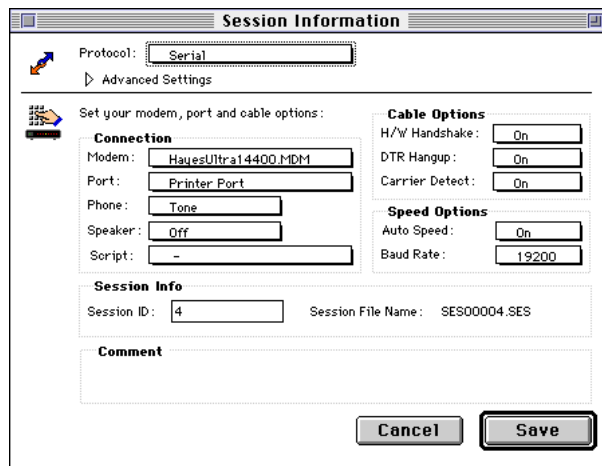
For most situations, the Session Information form contains all the parameters you need to configure for a modem session. However, FirstClass also allows you to configure certain advanced connection options. To do so, follow these steps.

- 1) From the FirstClass Tools menu, choose Configure → List Sessions.



Session	#	Type	Description	Baud	Port
3	1	Serial	USRobotics Sportster 14.4	19200	Modem Port
4	1	Serial	Hayes Ultra 14400	19200	Printer Port
100-101	2		Network Sessions		

- 2) Double-click the session you want to change.



Session Information

Protocol:

Advanced Settings

Set your modem, port and cable options:

Connection

Modem:

Port:

Phone:

Speaker:

Script:

Cable Options

H/W Handshake:

DTR Hangup:

Carrier Detect:

Speed Options

Auto Speed:

Baud Rate:

Session Info

Session ID: Session File Name: SES00004.SES

Comment

- 3) Select Advanced Settings.

The Trace options are used during troubleshooting (refer to [“Troubleshooting tools” on page 49](#) for a complete description).

4) Change the following fields as required:

Window: The size of the sliding window, in packets. FirstClass uses a sliding window protocol, which allows for efficient data transfer even over long connection paths. Select one of the following options:

- 4: Recommended if you are connected over a very slow link with little or no delay, such as a modem connection with a speed of 2400 bps.
- 8: Recommended if you are connected over a link with long delays, such as a Wide Area Network (WAN) or satellite link.
- *Auto*: Recommended if you want your computer to negotiate with the modem to determine the largest possible window size that can be used. SoftArc recommends that you select this option.

Packets: The maximum packet size in bytes. You might need to set the packet size if you are communicating over many types of networks.

Larger packets are more efficient, but will slow down the response to other commands while file transfers are in progress. For example, if your network has a modem connection to an X.25 network, the modem can support communication speeds of up to 14400 bps, but the maximum speed of the X.25 network is 2400 bps. In this case, you would need to lock the packet size to 232 bytes.

You can choose the following sizes.

- *232 bytes*: Recommended if you will be communicating with modems with speeds of 2400 bps.
- *512 bytes*: Required if you will be communicating with modems with speeds of 9600 bps or 14400 bps, and networks.
- *Auto*: Recommended if you don't know what kind of modem you will be communicating with, or if you will be communicating with different types of modems (for example, if some of your clients use modems with speeds of 2400 bps, and others use those with 14400 bps). SoftArc recommends that you select this option.

Lock: Whether to decrease the packet size if transmission errors occur. To enable FirstClass to change the packet size, choose None. To lock the packet size, select the size to be used. SoftArc recommends that you select None.

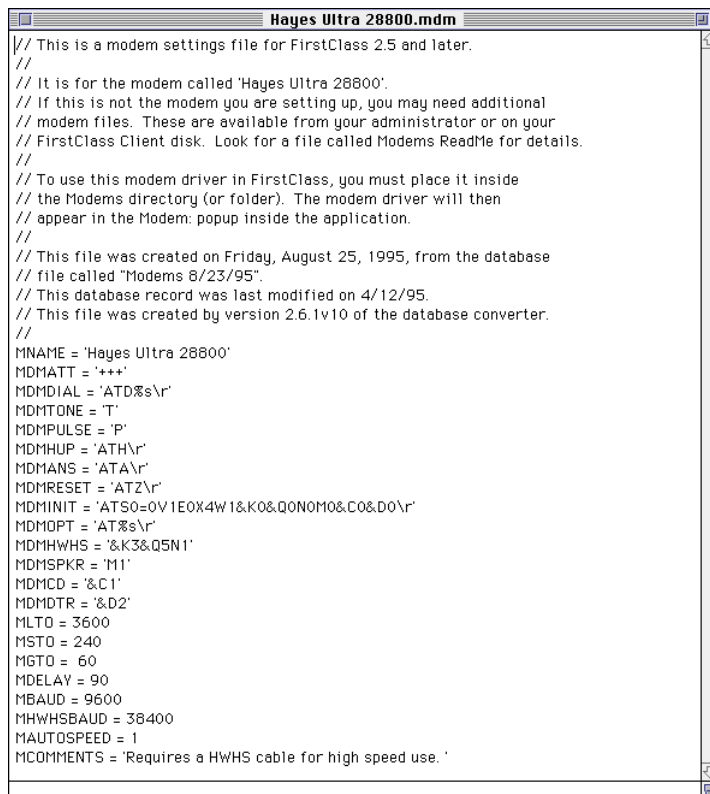
Encrypt: Whether to encrypt data transmitted between the client and server. If you want encryption to occur, select On. (This option is most frequently used on networks.) If you do not want encryption to occur, select Off. Do not use encryption if you are using a modem that supports V.42bis or MNP 5 compression, because encrypted data cannot be compressed.

- 5) Click Save.

The MDM file format

FirstClass provides many predefined modem (MDM) files. You can probably find an MDM file for your modem in the FirstClass Post Office → Server → Modems folder.

Each MDM file is a text file that stores information about a particular type of modem. You can configure most of the parameters in the MDM file in FirstClass Tools. The configuration specified in FirstClass Tools overrides the value specified in the MDM file. For more information, refer to [“Setting up modem sessions” on page 24](#). To configure the other parameters, you can modify the MDM file directly with a text editor. For example, the following is the MDM file for the Hayes ULTRA modem.



```
// This is a modem settings file for FirstClass 2.5 and later.
//
// It is for the modem called 'Hayes Ultra 28800'.
// If this is not the modem you are setting up, you may need additional
// modem files. These are available from your administrator or on your
// FirstClass Client disk. Look for a file called Modems ReadMe for details.
//
// To use this modem driver in FirstClass, you must place it inside
// the Modems directory (or folder). The modem driver will then
// appear in the Modem: popup inside the application.
//
// This file was created on Friday, August 25, 1995, from the database
// file called "Modems 8/23/95".
// This database record was last modified on 4/12/95.
// This file was created by version 2.6.1v10 of the database converter.
//
MNAME = 'Hayes Ultra 28800'
MDMATT = '+++ '
MDMDIAL = 'ATD%s\r'
MDMTONE = 'T'
MDMPULSE = 'P'
MDMHUP = 'ATH\r'
MDMANS = 'ATA\r'
MDMRESET = 'ATZ\r'
MDMINIT = 'ATS0=0V1E0X4W1&K0&Q0N0M0&C0&D0\r'
MDMOPT = 'AT&s\r'
MDMHWHS = '&K3&Q5N1'
MDMSPKR = 'M1'
MDMCD = '&C1'
MDMDTR = '&D2'
MLTO = 3600
MSTO = 240
MSTO = 60
MDELAY = 90
MBAUD = 9600
MHWHSBAUD = 38400
MAUTOSPEED = 1
MCOMMENTS = 'Requires a HWS cable for high speed use.'
```

The most common reason for changing an MDM file is to increase the Long Timeout period (MLTO). You might need to do so if you are using a slow communications link—for example, if you are making calls over a great distance (such as across the Atlantic). You will probably not need to change the other parameters.

You might need to create an MDM file if the modem you are using is not available in the list of modems displayed in FirstClass Tools.

Before creating an MDM file, use the Custom Install option to install the the Other Modems folder. The folder is created in FirstClass Post Office → Server → Modems. If you can't find your modem there, check the Conferences → Software Libraries → Modem Settings conference on SoftArc Online. If you do not find an MDM file for your modem, ask SoftArc Technical Support to create one. When you call, have your modem documentation handy.

Syntax rules

The strings in the MDM files use the format of the C programming language. Therefore, all backslashes must be “quoted” with another backslash. For example, the string `\\Q3` will be sent to the modem as `\Q3`.

FirstClass allows both single quotes (') and double quotes (") as string delimiters. The provided MDM files use single quotes because some AT&T-based modems use double quotes in their commands.

The following special characters are used in MDM files:

- `\r` (return)
- `\n` (linefeed)

MDM file parameters

With the syntax rules described in the previous section, use the following parameters in a modem file.

MNAME

The complete name of this modem, as opposed to the truncated DOS file-name. This parameter, required because MDM files for Windows servers have DOS filenames, displays the modem name on the Session Information form.

MDMATT

The Attention string, typically + + +. This variable allows the use of TIES strings (an alternative format for the Attention string) although few modems use them.

MDMDIAL

The Dial string, typically AT%s\r. The client uses this string when dialing a FirstClass Server. The %s is replaced with the phone number in the Gateway Configuration form, together with the tone or pulse modifiers.

MDMTONE and MDMPULSE

The tone and pulse dial modifiers. Some modems do not support these modifiers. For such modems, these parameters must be blank. These parameters correspond to the Phone field on the Session Information form.

MDMHUP

The Hangup string, typically ATH\r.

MDMANS

The Answer string, typically ATA\r.

MDMRESET

The modem Reset string. Common Reset strings are AT&F\r and ATZ\r. The AT&F\r string performs a hardware reset, reverting to factory settings. The ATZ\r string reverts to settings saved with the AT&W command.

MDMINIT

The Initialization (INIT) string. This string can be up to 40 characters long. The Initialization string is used to turn off the extended functions of the modem, including flow control, data compression, error correction, DTR hangup, and carrier detection, thus allowing these functions to be controlled by the modem configuration defined on the Session Information form.

If you use ATZ\r as the Reset string, the Initialization string must contain the following commands, which are required by FirstClass.

ATS0=0V1E0

where:

- *S0=0*: Disables auto-answer.
- *V1*: Returns non-numeric (text) results.
- *E0*: Disables echo.

For a Hayes ULTRA modem, you could use the following Initialization string:

ATS0=0V1E0X4W1&K0&Q0N0M0&C0&D0\r

This string contains the standard configuration plus the following optional commands:

- *X4*: Enables the return of result codes to the user.
- *W1*: Enables the extensions to the result codes. This causes the details of the connect type to appear in the connection progress display on the client and server.
- *&K0*: Disables flow control.
- *&Q0*: Disables error correction and compression.
- *N0*: Disables the autospeed function.

- *MO*: Disables the modem speaker.
- *&C0*: Disables carrier detection.
- *&D0*: Disables DTR hangup.

The example initialization string initializes the modem as a high speed modem with a speed of 2400 bps. The modem will only connect at speeds at or below the speed of the last command sent to it.

MDMOPT

The Option string is similar to the Dial string. It is typically *AT%s\r*. The %s will be replaced by the optional commands listed below.

- *MDMHWHS*: Enables flow control, error correction, and data compression. For the Hayes ULTRA, it would be *&K3&Q5N1*, meaning turn on hardware handshaking, compression, and error correction (auto-reliable mode), and lock the speed regardless of the connection rate. This command corresponds to the H/W Handshake field on the Session Information form.
- *MDMSPKR*: Enables the modem speaker during dialing and negotiation. It corresponds to the Speaker field on the Modem.FCP form.
- *MDMCD*: Enables carrier detection. Enables carrier detection. It corresponds to the Carrier Detect field on the Session Information form.
- *MDMDTR*: Enables DTR hangup. It corresponds to the DTR Hangup field on the Session Information form.

These commands are sent to the modem only if they are configured in the modem connection file.

MBAUD

The speed to use if hardware handshaking is not enabled. For a high-speed modem, this parameter is usually set to 9600 bps. For lower-speed modems, the parameter is usually set to the highest rate the modem supports. This parameter corresponds to the Baud Rate field on the Session Information form.

MHWHSBAUD

The speed to use if hardware handshaking is enabled. This speed is typically two to four times higher than the rate specified in MBAUD. Do not change this parameter in the MDM file, but change it in the modem connection file.

MAUTOSPEED

The Autospeed string. This string specifies whether to use the autospeed feature on hardware handshaking connections. This parameter corresponds to the Auto Speed field on the Session Information form.

MLTO

The Long Timeout string. This string specifies how long (in 60ths of a second) to wait for a CONNECT signal after sending the Dial command. If the connection will take a long time (for example, for calls over a great distance), you might wish to increase the Long Timeout period.

MSTO

The Short Timeout string. This string specifies how long (in 60ths of a second) to wait for an OK from the modem after sending most commands.

MGTO

The Guard Timer string. This string specifies how long (in 60ths of a second) to wait after sending the Attention string before sending any more commands.

MDELAY

Some modems, especially internal and shared modems, take a while to wake up. This string specifies how long (in 60ths of a second) to wait for the modem to wake up before sending it commands.

MCOMMENTS

General comments about the modem.

Connection scripts

When you configure a modem connection, you can specify the name of a file containing a script that executes automatically when the modem answers or initiates a call. For example, you might use a script file if the FirstClass Server is connected to an X.25 network. This appendix explains how to use connection scripts.

Creating a connection script

To create a connection script file, follow these steps.

- 1) Using a text editor such as SimpleText or TeachText, create a script using the commands listed in [“Connection script commands” on page 86](#).
- 2) Name the file, using a name ending with the extension “FCL”.

Copy the file into the FirstClass Post Office → Server → Scripts folder. The script appears in the Script field on the Session Information form.

The screenshot shows the 'Session Information' dialog box. At the top, 'Protocol' is set to 'Serial'. Below it is a section for 'Advanced Settings' with a sub-section 'Set your modem, port and cable options:'. This section is divided into three parts: 'Connection', 'Cable Options', and 'Speed Options'. The 'Connection' part has fields for 'Modem' (HayesUltra14400 MDM), 'Port' (Printer Port), 'Phone' (Tone), 'Speaker' (Off), and 'Script' (Sprintnet.FCL). The 'Cable Options' part has checkboxes for 'H/W Handshake' (On), 'DTR Hangup' (On), and 'Carrier Detect' (On). The 'Speed Options' part has checkboxes for 'Auto Speed' (On) and a 'Baud Rate' field (19200). Below these is a 'Session Info' section with 'Session ID' (4) and 'Session File Name' (SES00004.SES). At the bottom is a 'Comment' text area and 'Cancel' and 'Save' buttons.

Session Information	
Protocol: Serial	
Advanced Settings	
Set your modem, port and cable options:	
Connection	Cable Options
Modem: HayesUltra14400 MDM	H/W Handshake: <input type="checkbox" value="On"/>
Port: Printer Port	DTR Hangup: <input type="checkbox" value="On"/>
Phone: Tone	Carrier Detect: <input type="checkbox" value="On"/>
Speaker: Off	Speed Options
Script: Sprintnet.FCL	Auto Speed: <input type="checkbox" value="On"/>
	Baud Rate: 19200
Session Info	
Session ID: 4	Session File Name: SES00004.SES
Comment	
Cancel Save	

Connection script commands

A script file can contain the following commands.

SEND

Sends text to the modem. Use the following format:

```
SEND '<text>'
```

where:

- `<text>` is the text you want to send to the modem. If the text contains spaces, you must enclose the text in single or double quotation marks. Do not type the angle brackets on this or any other parameter. You can include the following escape sequences in the `<text>` parameter:

```
\r
```

```
\n
```

where:

- `\r` represents a carriage return after the text
- `\n` represents a new line before the text

For example, to send the password “mypassword” followed by a carriage return to the modem, you would enter:

```
SEND 'mypassword\r'
```

WAITFOR

Instructs the server to wait for any of the specified strings to be returned from the remote modem. If the timeout expires before any of the strings have been received, the server terminates the connection attempt and reports an error 1083 (timeout in script). Use the following format:

```
WAITFOR '<text1>' '<text2>' . . . -T<timeout>
```

where:

- `<text1>` and `<text2>` is the text you want to send to the modem. If the text contains spaces, you must enclose the text in single or double quotation marks. You can list as many items of text as you wish. Do not type the angle brackets or the ellipsis (. . .).
- `<timeout>` is the time period you want the modem to wait, in 60ths of a second. You must include the `-T` parameter.

For example, to instruct the server to wait 20 seconds for the words “service”, “disconnect”, or “no carrier”, you would enter:

```
WAITFOR 'service' 'disconnect' 'no carrier' -T1200
```

DISPLAY

Sends text to the modem for display purposes only. Use the following format:

```
DISPLAY '<text>' -D
```

where:

- `<text>` is the text you want to send to the modem. If the text contains spaces, you must enclose the text in single or double quotation marks. You must include the `-D` parameter.

For example, to instruct the modem to write the text “X.25 login sequence starting” to the log file, you would enter:

```
DISPLAY 'X.25 login sequence starting' -D
```

DELAY

The DELAY command instructs the server to wait a specified time. Use the following format:

```
DELAY <nnn>
```

where:

- `<nnn>` is the time period you want the modem to wait, in 60ths of a second.

For example, to instruct the server to wait ten seconds, you would enter:

```
DELAY 600
```


A

Administrator

A user with all privileges, responsible for setting up and maintaining a system.

AppleTalk

The networking protocol developed by Apple Computer Inc. to enable file and resource sharing among Macintosh computers and devices.

Application memory

On the Macintosh, the memory allocated to an application. To change the application memory, quit the application, select the application icon in the Finder and choose File → Get Info. Make the desired changes.

B

Baseband

A signal transmitted at its original frequency. The entire bandwidth of the transmission channel is used for transmission of the signal. *See also* [Broadband](#).

Base server

See [Basic server](#).

Basic server

A FirstClass Server sold with the standard services for its platform. For example, the basic FirstClass Server for Mac OS includes the Macintosh User Interface and the network protocol for AppleTalk. The basic FirstClass Server for Windows includes the Windows User Interface and the network protocol for IPX. *See also* [Enterprise server](#), [Macintosh User Interface](#), [Windows User Interface](#).

Baud rate

The measure of how fast a modem transfers data. For modems that send a single bit of data at a time, the standard speeds are 300, 1200, 2400, 9600, 14400, and 28800 bps. The higher the baud rate, the faster the data transfer.

Bps

Bits per second. The measure of the speed of a modem.

Broadband

A type of transmission in which the transmission channel transmits at more than one frequency at the same time. Thus, it can send multiple signals simultaneously.

C**Carrier detection**

The method used to determine whether a modem connection has been dropped. *See also* [Hardware carrier detection](#).

Client

A software application that works on the behalf of a user to access the services provided by a server. *See also* [Server](#).

Client extension

A software program that adds a feature to the FirstClass Client.

Client/server architecture

An architecture in which one computer runs server software and acts as a server for a second, connected computer that runs client software. *See also* [Client](#), [Server](#).

Communications Toolbox

A set of managers and utilities provided by Apple Computer Inc. to allow developers of third-party products to add networking and communication functions to their applications.

Compression

The processing of data to reduce the number of bytes required to store it, and consequently, the amount of time required to transmit it across a communication medium. *See also* [Data compression standard](#).

CTS

Clear To Send. The pin used in hardware handshaking.

D**Data compression standard**

A standard for compressing data, sending it across a modem link, and then expanding it at the receiving end. Data compression results in an increase

in the effective throughput, if the data can be compressed. Data already compressed by another utility cannot be compressed.

DTR

Data Terminal Ready. A method of instructing a modem to hang up on a call. You can configure FirstClass to use this method. If you do, the modem monitors the DTR pin on the serial cable. When the server wants to hang up, it turns the DTR pin off.

E**Enterprise server**

A FirstClass Server equipped with all optional services. Compare [Basic server](#).

Error correction standard

A standard for correcting modem errors resulting from outside interference, such as phone line noise. Error correction ensures that data coming out of the receiving modem is exactly the same as the data going into the sending modem.

Extension

A software program that adds a feature to the Macintosh operating system.

F**Fall back**

The action of a modem that reverts to a speed lower than its maximum communication rate. When two modems connect, they negotiate to find the best communication speed they can use for the connection. If the maximum speed supported by one modem is lower than the maximum speed supported by the other, the higher-speed modem “falls back”.

FAQ

Frequently Asked Question. SoftArc provides a list of FAQs (and their answers) on SoftArc Online.

FCP

FirstClass Protocol. Used for communication between a FirstClass Server and a FirstClass Client. FCP ensures that no data is lost during communication.

FirstClass Client

The application used to log into a FirstClass Server and access the services provided by it. The FirstClass Client is freely distributable.

FirstClass Notifier

The application used by users who work on a network and connect to a FirstClass Server by an AppleTalk or IPX connection. The FirstClass Notifier tells users of new incoming mail when they are not logged into the FirstClass Server.

FirstClass Personal

A feature of FirstClass that allows users to use FirstClass features while disconnected from their FirstClass Server.

FirstClass post office

The folder containing all FirstClass data, including messages, files, and the FirstClass Directory.

FirstClass Protocol

See [FCP](#).

FirstClass Server

The software application that allows a computer to offer access to a FirstClass system to users of the FirstClass Client. The server, which usually runs on a separate, dedicated computer, determines who can connect to the FirstClass System, what services people can use when they are connected, and what information they can see.

FirstClass Tools

The application you use to configure a FirstClass Server.

Flow control

See [Handshaking](#).

Frame

A unit of data transported across a communications medium. Frames contain additional information that ensures they reach their destination.

G

General Purpose Input pin

See [GPI pin](#).

GPI pin

General Purpose Input pin. A pin on the Macintosh serial port required for hardware carrier detection. Some older Macintosh computers do not support this pin.

GVC

A family of low-cost modems.

H

Handshaking

The process of controlling data flow between a computer and its modem. Handshaking (or flow control) ensures that data is not lost, as would be the case if the computer sent data to the modem faster than the modem could process it. The two standard methods for handshaking are software handshaking (using XON/XOFF) and hardware handshaking (using RTS/CTS).

Hardware carrier detection

A type of carrier detection in which a computer monitors the Carrier Detect pin on an attached serial cable leading to a modem. The modem turns this pin on when it receives a special tone, called the carrier, from the remote modem. When it ceases to receive this tone, it turns off this pin. *See also* [Carrier detection](#).

Hardware flow control

See [Hardware handshaking](#).

Hardware handshaking

A method of flow control using the Clear to Send (CTS) and Request to Send (RTS) pins on the serial cable. *See also* [Input handshaking](#), [Output handshaking](#).

Hayes

A family of modems developed by Hayes Computer Corporation. The Hayes standard has been followed by many other modem manufacturers.

High-speed modem

A modem that supports data compression, or error correction, or both.

I**Input handshaking**

A method of flow control used to control the transmission of data from the computer to a modem. When the computer has received as much data as it can handle, it disables the Request to Send (RTS) pin. It enables this pin when it is ready to resume receiving data from the modem. *See also* [Handshaking](#).

Internet

A world-wide collection of networks that communicate using the IP protocol. It includes public networks such as the National Science Foundation Network (NSFnet), and private networks, such as those at various universities. *Compare* [Intranet](#).

Internetwork Packet Exchange

See [IPX](#).

Intranet

A private network that uses the IP protocol. *Compare* [Internet](#).

IPX

Internetwork Packet Exchange. A protocol used for the transportation of packets of information across a network. This protocol is used by Novell NetWare.

L**LAN**

Local Area Network. A group of computers at one physical location that are connected to allow users to share hardware and software resources.

License

Software that enables and authorizes you to use FirstClass or one of its optional modules.

Local area network

See [LAN](#).

Local flow control

See [Handshaking](#).

LocalTalk

A low-cost LAN system developed by Apple Computer Inc. for use with AppleTalk.

M**Mac OS**

An operating system developed by Apple for Macintosh computers.

Macintosh

A family of personal computers developed by Apple, and distinguished by their graphical user interface.

Macintosh User Interface

A graphical interface provided for users of the FirstClass Client for Mac OS.

Master volume

The volume on which the post office is installed.

Microsoft Windows

An operating system for DOS computers that provides a graphical user interface.

Microsoft Windows NT

An enhanced version of Microsoft Windows designed for use as a server.

Modem

MODulator/DEModulator. A device that connects a computer to a transmission line.

Modem session

A session that allows one user to connect to a FirstClass Server (using a modem) at any given time. By increasing the number of modem sessions, you increase the number of users who can simultaneously connect to FirstClass using a modem.

Modem string

A series of commands sent to a modem to perform a particular function (such as resetting or initializing the modem). Many modems use strings based on the standard developed by Hayes Microcomputer Products Inc.

Multiprocessing

A technique that allows multiple jobs to be processed simultaneously on one computer.

N**NETBEUI**

NetBIOS Extended User Interface. A protocol used to transport data between computers on a network. You cannot use NETBEUI with FirstClass. *See also* [NETBIOS](#).

NETBIOS

Network Basic Input/Output System. A network application programming interface developed by Microsoft and used in its LAN Manager product. NETBIOS receives application network requests and processes them using a network protocol (often NETBEUI). You cannot use NETBIOS with FirstClass.

NetWare

A family of network operating systems produced by Novell Inc.

Network interface card

See [NIC](#).

Network Notifier

See [FirstClass Notifier](#).

Network session

A session that allows one user to connect to the FirstClass Server (across a network) at any given time. By increasing the number of network sessions, you increase the number of users who can simultaneously connect to FirstClass across the network.

Network user

See [Regular user](#).

NIC

Network Interface Card. A circuit board installed in a computer to enable it to communicate with other computers across a network.

Notifier

See [FirstClass Notifier](#).

O**Open file limit**

The maximum number of open files that a particular operating system can simultaneously support.

Open Transport

The network and communications subsystem for System 7.5 and later versions of the Mac OS. It has built-in support for multiple networking and serial communication protocols.

Output handshaking

A method of hardware handshaking regulating data transmission from a modem to a computer. When the modem receives as much data as it can handle, it disables the Clear to Send (CTS) pin and transmits the data to the computer. The modem enables this pin when it is ready to resume receiving data from the computer. See also [Hardware handshaking](#).

P**Post office**

The repository of all FirstClass data, including messages, files, and the FirstClass Directory.

Privilege group

One or more users who require—and are given—access to the same features or conferences.

R**RAM**

Random Access Memory. The working memory of the computer which stores applications and data temporarily (that is, until the computer is turned off). RAM permits non-sequential access to its contents.

Random Access Memory

See [RAM](#).

Regular user

A user who can log into FirstClass using either a network session or a remote session (for example, using a modem or TCP/IP connection).

Remote session

A session that allows one user to connect to the FirstClass Server (using a modem or through the Internet) at any given time. By increasing the number of remote sessions, you increase the number of users who can simultaneously connect to FirstClass using a modem or through the Internet. See also [Network session](#).

Remote user

A user who can only log into a FirstClass system through a remote session (for example, using a modem or TCP/IP connection). In earlier versions of FirstClass, remote users were called “telecom users”. Compare [Regular user](#).

Request to Send

A pin used in hardware handshaking. See [RTS](#).

Router

A system that transfers data between two networks.

RTS

See [Request to Send](#).

S**Scripting**

A function whereby users can string together a set of commands in order to automate processes within an application.

Serial

A hardware standard for sending data one bit at a time, commonly used to allow a computer to connect to a device such as a modem or printer.

Serial port

A socket on a computer, used to connect the computer to a device such as a modem or printer. The Macintosh uses a serial port to attach to a printer, whereas a PC uses a parallel port.

Server

A software application that allows a computer to offer a service to another computer. The FirstClass Server offers access to a FirstClass system. *See also* [Client](#).

Server computer

A machine running the FirstClass Server software.

Session

A logical connection between two applications; for example, a connection between the FirstClass Client and the FirstClass Server.

Settings document

A file that contains all the information required for a FirstClass Client to connect to a FirstClass Server. In earlier versions of FirstClass, settings documents were called “settings files”.

Settings file

See [Settings document](#).

Simple Mail Transfer Protocol

See [SMTP](#).

Sliding packet protocol/Sliding window protocol

A protocol that, when sending a data stream, allows the sender to transmit a certain number of packets before receiving acknowledgment. After the receiver acknowledges receipt of the first packet, the window of queued packets “slides” along one packet in the stream and adds it to the queue. This class of protocol improves performance on slow links and WANs.

SMTP

Simple Mail Transfer Protocol. A protocol that describes how mail messages are transferred between servers on a TCP/IP network.

Software handshaking

A method of flow control regulating data transmission. You cannot use software handshaking with FirstClass. *See also* [XON/XOFF flow control](#).

Surplus remote session

A remote session that is not currently being used for a modem connection. *See also* [Remote session](#).

T**TCP/IP**

Transmission Control Protocol/Internet Protocol. A suite of communications protocol developed by the U.S. Department of Defense, and used by the Internet.

Telecom user

See [Remote user](#).

Toggle

To turn on and off like a toggle switch.

Token ring

A LAN topology developed by IBM, in which all stations connect to a central wiring hub.

Transmission Control Protocol/Internet Protocol

See [TCP/IP](#).

U**UART 16550**

Universal Asynchronous Receiver/Transmitter. A chip used in serial ports on PCs, needed for connection speeds higher than 14400 bps.

Universal Asynchronous Receiver/Transmitter

See [UART 16550](#).

USRobotics

A family of high-quality modems.

V**V.32**

The CCITT standard for data transmission at speeds up to 9600 bps.

V.32bis

The CCITT standard for data transmission at speeds up to 14400 bps.

V.32terbo

A modem standard for data transmission at speeds up to 19200 bps.

V.34

A CCITT error-correction standard, only usable by modems capable of operating at 28800 bps.

V.42

The CCITT error correction standard.

V.42bis

The CCITT data compression standard. It has a theoretical maximum compression ratio of four to one.

V.fc

A modem standard for communication at speeds of up to 28800 bps.

V-FAST

A modem error-correction standard only usable by modems capable of operating at 28800 bps.

Virtual memory

Hard disk space used as a slow form of RAM. Temporarily useful for running an especially large application, but degrades performance too much to be useful on a server.

Volume

A partition of a hard disk.

W**WAN**

Wide Area Network. A large network containing many smaller networks and spanning a large geographic area.

Wide Area Network

See [WAN](#).

Windows

See [Microsoft Windows](#).

Windows NT

See [Microsoft Windows NT](#).

Windows User Interface

A graphical interface provided for users of the FirstClass Client for Windows.

X**XON/XOFF flow control**

A software flow control method using two special characters: XON, which tells the computer to start sending data, and XOFF, which tells the computer to stop sending data. You cannot use XON/XOFF flow control with FirstClass.

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