FirstClass 7 Administrator's Guide Education Edition

Centrinity Inc.

905-762-6000 or 1-800-763-8272
Web: www.centrinity.com
Email: sales@centrinity.com

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Technical support

Telephone technical support is available to registered administrators at the following numbers:

Toll free in North America: 1-800-346-9108

Toronto: 905-762-6060.

International: +353-61-725-200

Online support questions may be directed to support@centrinity.com.

Contents

Installing and configuring FirstClass 27

Figures

Introduction

Overview

FirstClass Education Edition(FirstClass) is an easy to use, advanced communication and information system that integrates Internet mail and services with group conferencing, access to existing corporate databases, forms processing, real-time discussions, and online communications functions. Because FirstClass takes care of modem and file transfer protocols automatically, remote access is as easy as network access.

Depending on your objectives, you may be interested in developing add-on applications for FirstClass systems. You can use a variety of different Centrinity tools to achieve this end, including:

- Database Toolkit
- Client Extension Toolkit
- Gateway Toolkit
- FirstClass Rapid Application Developer.

You can find these toolkits on your CD-ROM, and/or the latest versions on Centrinity's web site.

About this book

This book explains the procedures involved in planning, creating and maintaining a FirstClass server environment. The book is partitioned into the following five sections:

- Introduction

  This section provides conceptual information about the FirstClass product and the administrator's role.

- Installing and configuring FirstClass

This section provides requirements and instructions for installing the various FirstClass components. It explains how to configure your system, making it ready to be customized for your needs.

- Planning your FirstClass environment

  This section provides conceptual information about the foundations your FirstClass system will be built upon: groups, organizational units, privileges, Directory filtering, and Model Desktops.

- Creating your FirstClass environment

  This section provides detailed information about adding the objects to your FirstClass system that will help you create a unique environment that meets your organizational needs: user groups, conferences and conference groups, group and resource calendars, users, gateways to other FirstClass systems, and multiple volumes.

- Maintaining your FirstClass server.

  This section provides the information required for day-to-day operation of your FirstClass server: the Server Monitor, using log and statistics files, backups, restores, and selective restores.

FirstClass 7 Administrator's Guide Education Edition provides a walkthrough of a simple system for an example school called Avalon Academy. Avalon Academy is a private school providing a variety of innovative educational opportunities. It prides itself on its use of technology and on the combination of sound business and pedagogic principles upon which it is based.

You might find it useful to follow along in the creation process. You can use this book as a simple tutorial, following the procedures and creating your own copy of the Avalon Academy system. If you do so, you will end up with working versions of key features and the experience of having created them. If you prefer a different configuration, you can always delete the objects you created.This is a simple setup created for illustrative purposes. While it should help you understand some of the

principles involved in setting up a FirstClass system, it will not provide you with a fully developed system.

For detailed how-to descriptions of features and forms, see our online help.

Who should read this book

This book is meant for FirstClass administrators responsible for maintaining a FirstClass server and Internet Services on Mac™ OS or Windows® platforms. For information on planning, creating and maintaining Internet Services, see *FirstClass Internet Services Administrator's Guide*. For information about FirstClass Voice Services, see *FirstClass Voice Services Administrator's Guide*.

This book is essential for administrators planning a new system or introducing a new feature to an existing system.

What you should already know

You should be familiar with the capabilities and terminology for your:

- FirstClass software (including server, client, Internet Services, Voice Services (if applicable), and additional components)
- Mac OS or Windows operating system
- expansion cards
- Palm Computing® Connected Organizers (organizers, handhelds, or devices) if applicable
- network protocols
- peripherals such as modem, CD-ROM, printer, hard drive, tape drive and diskette drive.

Documentation conventions

Menu items

Each level of menu items is separated by >. For example, the Clear item under the Edit menu is shown as Edit > Clear.

Variables

Text in *italics* represents variables for which you must type your own value.

New in this release

- Lotus Notes/Domino Connector
- The FirstClass server is now available on Mac OS X and FirstClass clients have been introduced for Mac OS X and Linux.
- Expanded batch administration functionality.
- Enhancements have been made to mirroring to make it more efficient.
- Introduction of mail rules allow you to set up rules for automatic message handling in your Mailbox, conferences, and calendars.
- Enhanced calendar functionality and views.
- Improvements to content editing using FirstClass documents.
- New redirect feature improves autoforwarding capabilities.
- Ability to create documents that sync to Palm(TM) Computing connected organizers in a Memos folder
- Enhancements to Explore view of the client.
- The IP Network Notifier is now bundled directly with the client installer.
- Many enhancements to the web browser interface making the experience more like the client experience.
- High-performance COBRA Rules engine used to provide full server-side rules processing with no change in server performance.

Administrator tasks

You can use the administrator account to send and receive mail in your official capacity as administrator. To avoid data loss, we recommend that you add a personal user account for yourself for day-to-day use, and use the administrator account only for your official duties as administrator.

You can share your administration responsibilities, if you wish. For more information, see "Subadministrators" on page 11.

Your responsibilities as administrator

The icons on the administrator's Desktop represent most of the functions you will perform in your FirstClass system. For information about the special objects on the administrator's Desktop, see "The administrator's Desktop" on page 40. Don't forget, however, that you have several other responsibilities not represented by those icons. As FirstClass administrator, your responsibilities fall into the following four categories:

- installing and configuring the FirstClass server, and its required components and modules
- planning your FirstClass environment
- creating your FirstClass environment
- maintaining your FirstClass environment.

Installing and configuring FirstClass

The initial installation and configuration of your FirstClass server is a quick and straightforward process. Installing and configuring FirstClass and its components and modules involves the following tasks:

- installing the FirstClass server, client, and Internet Services

This is described in Chapter 4, “Installing FirstClass”. If applicable, installation instructions for Voice Services is described in our online help.

- configuring the FirstClass server

  This is described in Chapter 6, “Configuring your system”.

- adding user licenses and additional required connection services

  This is described in *FirstClass Tools Reference*.

- distributing FirstClass to users.

  This is described in “Installing the FirstClass client” on page 34.

Planning your FirstClass environment

The first step in creating your FirstClass online environment is planning. You need to plan your environment so it will be easy for users to work together securely in an interactive way. When planning, you must consider who your users are, how they will interact, and what types of information they will communicate between each other. Planning a secure, easy-to-use environment involves the following tasks:

- understanding privileges and groups and how to classify users in your FirstClass environment.

  This is described in Chapter 7, “Understanding groups, organizational units, and privileges”.

- understanding Directory filtering and applying effective Directory filters to the group structure you planned in the previous task to create a secure environment

  This is described in Chapter 9, “Understanding Directory filtering”.

- understanding Model Desktops and planning and creating effective Model Desktops for your group structure

  This is described in Chapter 8, “Understanding Model Desktops”.

Creating your FirstClass environment

Once you have planned your environment and used groups, privileges, Directory filters and Model Desktops to ensure you

have planned a secure FirstClass system, you will be ready to populate your collaborative environment and then think about expanding your FirstClass system. Creating your FirstClass environment involves some or all of the following tasks:

- using batch administration to populate your FirstClass environment (if necessary)

  This is described in Chapter 10, “Using batch administration”.

- adding conferences, conference groups, group and resource calendars, and users

  This is described in Chapter 12, “Adding conferences and conference groups”, Chapter 13, “Using group and resource calendars”, and Chapter 14, “Adding users”.

- adding gateways to other FirstClass servers and modules (if necessary)

  This is described in Chapter 16, “Adding gateways”.

- partitioning your FirstClass server into multiple volumes (if necessary)

  This is described in Chapter 17, “Working with multiple volumes”.

- creating a customized settings document and distributing it to users (if necessary)

  This is described in *FirstClass Designer*.

- creating forms and stationery (if necessary)

  This is described in *FirstClass Designer*.

- customizing web templates (if necessary)

  This is described in our online help and in *FirstClass Internet Services Administrator’s Guide*.

- administrating Voice Services (if necessary).

  This is described in *FirstClass Voice Services Administrator’s Guide*.

Maintaining your FirstClass environment

FirstClass server maintenance involves performing a set of tasks that are quick and simple to do, but can save you many hours of work if there is an unexpected emergency. These tasks are:

- monitoring your system using the Server Monitor, the Session Monitor and the various statistics and log files automatically generated by the FirstClass server

  This is described in Chapter 18, "Monitoring your system".

- understanding trash collection

  This is described in Chapter 19, "Trash collection".

- performing regular server backups

  This is described in Chapter 20, "Backing up your server".

- restoring your FirstClass system in case of emergency

  This is described in Chapter 21, "Restoring your post office".

- selectively restoring objects in your post office using the batch administration Export command as required

  This is described in Chapter 21, "Restoring your post office".

Checking the administrator's email

When certain events occur, FirstClass sends a message to the FirstClass administrator. These events include:

- failure to reset a modem after 50 attempts
- gateway problems
- autoregistration of a new user
- gateway license conflicts
- duplicate aliases
- mirror failures
- messages regarding exceeding text-to-speech licensing limits for FirstClass Unified Communications customers.

You should log into the administrator account regularly to check for mail. The frequency you choose will depend on your system configuration and size.

If you wish, you can set the preferences for the administrator's account to autoforward or redirect mail to your personal account. To do so, choose Edit > Preferences > Messaging >

Mail Rules. You can choose to redirect or forward items to your personal Mailbox, or a subadministrator's Mailbox.

Subadministrators

As administrator, you have to perform many tasks to set up and run your FirstClass system. While you are starting out, you may want to perform all these tasks on your own. Later on, however, you may want to share these responsibilities by adding subadministrators.

You can even add a subadministrator account for yourself, under a different name. You might find this useful if you want to work in the system without appearing in Who's Online as "Administrator".

Note If you are using FirstClass client software from an earlier release than your FirstClass server, upgrade your client software. To log in as a user with administrator privileges your client software must be from the same release as your server.

Subadministrator restrictions

Although subadministrators can perform many administrative functions, they are limited in several ways:

- A subadministrator has access to the administrator menu but not to the administrator's Desktop.
- A subadministrator cannot change the administrator's account or assign administrator privileges to other users.
- Only the administrator can turn off the Secure All Desktops feature.
- Some batch administration commands can be issued only by the administrator.
- A subadministrator can use batch administration only with a password designated by the administrator. (The administrator can use batch administration without a password.)

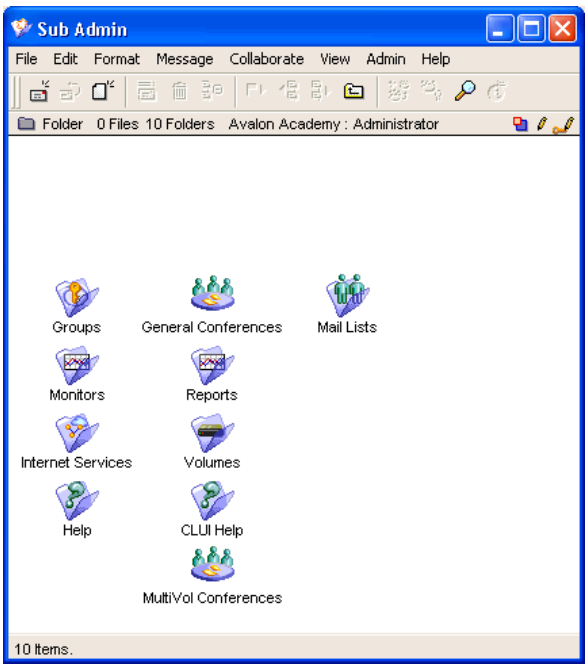
You can assign subadministrator privileges to all members of a user group, or to an individual person. For information about user groups, see Chapter 7, “Understanding groups, organizational units, and privileges”.

Creating subadministrator accounts

The default FirstClass post office contains a pre-configured user group called Sub Admin. This group is in the Configuration Groups section of the Groups folder on the administrator’s Desktop. To give a user subadministrator privileges, simply make the user a member of the Sub Admin group. This will add the Subadministrator and Does not expire features to the user, which gives him the ability to perform most administrative tasks, and guarantees that his account will not expire. Adding a user to the Sub Admin group will add the Sub Admin folder to the user’s Desktop, giving him all the privileges required to perform his duties as subadministrator.

The following is what the subadministrator will see when he opens the Sub Admin folder:

Sub Admin folder



This folder contains all of the objects on the administrator's Desktop that a subadministrator requires. Objects that exist only on the administrator's Desktop are the administrator's Mailbox and Address Book, the hard disk folder, the FC Resource Registry folder, the Gateways folder, and the Multi-site setup folder. These objects contain passwords to perform the functions associated with them and have been left off. If you want to include any of these objects in the Sub Admin folder, do the following:

1. Select the object you want to add to the Sub Admin folder.
2. Choose Collaborate > Add to Desktop.
3. Drag the copy of the object into the Sub Admin folder and arrange it where you like.

Note You can delete any object, or add any objects in the Sub Admin folder, as required.

Adding additional security

Subadministrators can see everything on the system. Their view of the Directory cannot be filtered. However, there are ways to make access more difficult.

To add some additional security, you can remove two objects from the Sub Admin folder: the Groups and General Conferences folders. This way, subadministrators cannot readily see confidential conferences (like management and human resources areas). However, they can still see these objects using the List Directory function available to all subadministrators.

Additionally, subadministrators do not have the authority to change the Secure field on the Group Privileges or User Information forms, nor do they have the authority to user the EXPORT command to retrieve conference or Mailbox items.

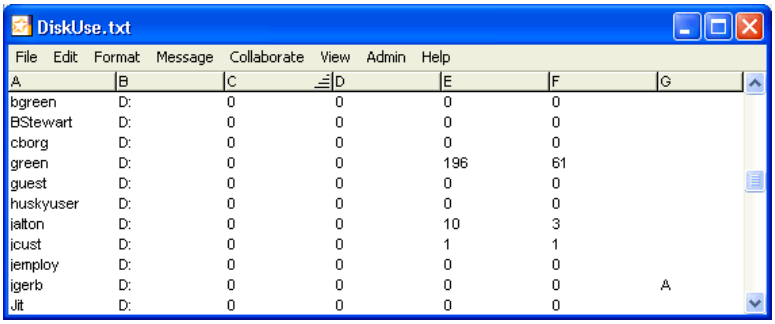
Finding existing subadministrators

There are two ways to find existing subadministrators:

- If you created a subadministrators by adding them to the Sub Admin group, simply search the Directory to list all members of that group.

- To find users who have the subadministrator privilege selected on their User Information forms, view the Disk Usage report (double-click Reports, then Statistics Folder, and choose DISKUSE.TXT). The last field describing a subadministrator contains an “A” (this report will only show those users who were specifically granted the subadministrator privilege on their User Information form, not those who are granted this privilege through group membership).

DISKUSE.TXT



A	B	C	D	E	F	G
bgreen	D:	0	0	0	0	
BStewart	D:	0	0	0	0	
cborg	D:	0	0	0	0	
green	D:	0	0	196	61	
guest	D:	0	0	0	0	
huskyuser	D:	0	0	0	0	
jalton	D:	0	0	10	3	
jcust	D:	0	0	1	1	
jemploy	D:	0	0	0	0	
jgerb	D:	0	0	0	0	A
Jit	D:	0	0	0	0	

Note Hold down the Shift key while opening the report to open it with the table manager. Then click on the column header to group all the As together.

In this Disk Usage report, for example, user jgerb has administrator privileges. For more information about the Disk Usage report, and the meaning of the fields, see our online help.

FirstClass server concepts

Before you can begin working as an administrator, you must understand the structure of the administrator's account and how users communicate with your server.

In this chapter, we will discuss:

- how users communicate with the server
- how sessions work
- how users connect to your system
- how to organize people and communications on your system
- how gateways can expand your FirstClass system.

How users communicate with the server

Users can communicate with your FirstClass server and access its features in a variety of ways: over a network using TCP/IP, IPX, or AppleTalk, over the telephone system using modems, over the Internet using a variety of Internet protocols, and, if you are a FirstClass Unified Communications customer, over the telephone using Voice Services and its associated hardware and software. Taking this into consideration, you should remember a few things:

- These communication methods are all optional. You only need to configure your system for the methods you actually intend to use.
- Internet Services requires TCP/IP. If you do not install TCP/IP you will not be able to run Internet Services and users will not be able to access your server over the Internet. For information about Internet Services, see *FirstClass Internet Services Administrator's Guide*.

- Regular users can have the option to work offline using FirstClass Personal. For complete details, see our online help.
- Voice Services requires additional hardware and software to enable users to connect to the server by telephone. These are explained in detail in *FirstClass Voice Services Administrator's Guide*.

Understanding sessions

When users log into your FirstClass server, they use sessions. Each login is one session. The session type a user uses depends how she logs in. If a user uses a modem to access the server, she will use a modem session. All other access methods use network sessions.

Network sessions

Network sessions are used by every user who logs into your system, except by those who log in using a modem. Any user logged into your FirstClass server will use a network session for as long as they are connected. Network sessions are configured by you and are limited by the following factors:

- your hardware capacity
- the amount of memory you have
- the type of licence you purchased:

  Regular licenses allow up to 250 concurrent sessions. If you require more network sessions, you should have the MP option.

For minimum and recommended requirements, see "Installing FirstClass" on page 29 and *FirstClass Tools Reference*.

For information about configuring network sessions, see *FirstClass Tools Reference*.

Modem sessions

The number of modem sessions is simply the number of modems available. A modem session is the way in which you configure the modem to work with the FirstClass server. When a user logs in remotely through a modem configured on the FirstClass

server, he will be using a modem session for as long as he is connected to the modem.

For information about configuring modem sessions, see *FirstClass Tools Reference*.

Understanding how users connect

There are two classes of user: Regular and Remote. When you add a new user, you define the class on the User Information form. For more information about adding users, see Chapter 14, “Adding users”.

Users configured as Regular users require regular user licenses. You can only add as many Regular users as you have regular user licenses. When using FirstClass in an education environment, students and staff must be Regular users. You can buy additional Regular user licenses at any time.

Users configured as Remote users require session licenses. You can add as many Remote users as you wish, but the number that can log in concurrently is limited by the number of session licenses you have. Session licenses are shared by Remote users and you can buy more at any time. When using FirstClass in an education environment, parents must be Remote users.

For information on all license purchases, contact your Centrinity sales representative.

For licensing instructions, see *FirstClass Tools Reference*.

Both Regular and Remote users can connect using any protocol. Access method does not affect the class of user or the type of user license required. A Regular user logging in from home with a modem will be accepted as a Regular user and will use a regular user license. A Remote user logging in over a local network will be accepted as a Remote user and will use a session license. No matter how you connect, you use the licensing appropriate to your class.

Now that you understand sessions, classes of users, and user licenses, we can look at how Regular and Remote users are treated slightly differently:

- A Regular user can always log in if a network session is available. (Remember, a Regular user has a regular user license that was purchased specifically for him, and the number of network sessions is limited by the level of licensing you purchased (regular or MP option), and your hardware.)
- A Remote user can only log in if a network session is available and there is an unused session license available. (Remember, a Remote user shares a number of session licenses with all other Remote users, and the number of network sessions is limited by the level of licensing you purchased (regular or MP option), and your hardware.)

Consider the following scenario:

- You have 50 teachers and staff and 1000 students who have regular licenses and are defined as Regular users on their User Information forms.
- You have 2000 parents who are defined as Remote users on their User Information forms.
- You have 30 session licenses.
- You have 200 network sessions defined.

Under this scenario, you could have the following possible situations:

- All 50 of your teachers and staff are logged in, and 150 students are logged in. No parents will be able to log in since all network sessions are in use.
- 30 parents are logged in. Only 170 teachers, staff or students will be able to connect.
- 20 parents are logged in. Only 180 teachers, staff and students will be able to connect.
- 150 teachers, staff and students are logged in. Only 30 parents will be able to connect. Even though there will be network sessions available, the parents (Remote users) can

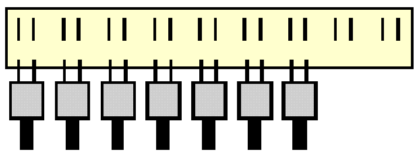
only connect if a session license is available and there are only 30 of those.

We will use an analogy to explain this concept. Consider your system as a power bar:

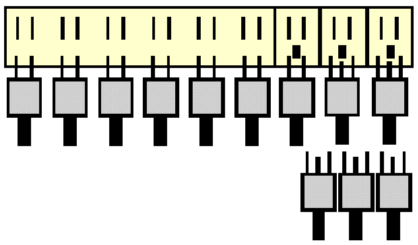
Regular user licenses are like two-pronged plugs. When you buy a new license, you get a plug to connect to your server.

Remote users are like three-pronged plugs. Your server comes with an unlimited supply of these plugs, but you need an adapter to fit them into your power bar.

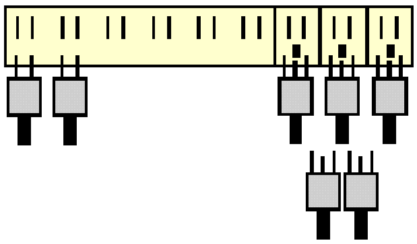
The outlets in the power bar represent the network sessions. You can increase the number of sessions by adding power bars. The number you can add is limited by the capacity of your electrical system – or in the case of your server, the amount of memory and disk space you have. In the following example, you have Regular users (two-pronged plugs) plugged into your network sessions (outlets on the power bar).



In the next example, you have purchased some session licenses. This converts some of your network sessions (outlets) so they can support Remote or Regular users (three-pronged or two-pronged plugs). Note that Remote users can only take as many slots as you have session licenses.



Even if only two Regular users (two-pronged plugs) were connected, the Remote users could still only use the three licenses (three-pronged outlets) available to them. However, the Regular users can use any network session (outlet).



Organizing people and communications on your system

Before you start adding users to your system, you should take some time to think about how they will use the system and what you want them to do or not do. You need to think about the different groups of users you'll have, their needs, your system needs (like performance and security), and your system limitations (like disk space, memory, and number of sessions).

Once you understand what your users need and what your limits are, you can start considering how FirstClass can meet those needs. Here we'll be looking at the communications and information sharing needs of users — probably the most significant use they'll be making of your system. We will introduce the privileges, permissions, and Model Desktop features of FirstClass. Privileges let you control a user's access to FirstClass features and the FirstClass Directory. Permissions let you control who uses conferences and calendars and how they

use them. Model Desktops let you control what users will see when they log in.

This section is merely an introduction to the concepts we will discuss in detail later. The examples we'll be walking through in the planning and creating sections of this book are relatively simple, but they contain the basics that you'll need no matter how complex your system. By combining these basics in different ways, you'll be able to create quite sophisticated structures.

Thinking about your organization's structure

Your organization probably already has groups defined. For example, the groups of people who will use your system might be Faculty, Administrators, Students, and Parents. You might also group them based on the department they are in or the building where they are located. Some people might belong to more than one group — for example, members of the Administrators group might also be members of the Faculty group. Whatever group structure you choose, it should reflect the logical divisions within your school's organization and how those divisions are reflected in privileges.

If there is no existing structure in your organization, think about the kinds of people who will be using your FirstClass system and their particular communication needs. Find the common factors, and establish a suitable name for each group of people. Determine how you want your system to meet the needs of each group.

Once you have such a structure in place, you can assign privileges to the groups rather than to the individual users. This process provides you with two advantages:

- It's easier and more efficient to set the privileges for a user group and then add users to that group than it is to set privileges individually for each user.
- You can be sure that all users in a specific user group have the same privileges. You'll probably need this kind of consistency since all users in, for example, the same department will need the same privileges.

Note Privileges can be overridden at the user level, if required.

In Chapter 7, "Understanding groups, organizational units, and privileges", we will discuss how to define groups and organizational units. We will also learn about setting privileges at the group level. In Chapter 9, "Understanding Directory filtering", we will learn about using Directory filters to make your system secure and to allow user groups to see or not see other groups in the Directory.

Thinking about communication

So far, we've thought about how people are organized in Avalon Academy. Now we have to think about how people will communicate on our system. Do we want one-to-one communication, one-to-many, many-to-many, or a combination of these? To put it in more technical terms, we have to decide whether our users will be relying on direct email, mail lists, or conferences to meet their communication needs.

When we were first setting up our groups, we decided that students would communicate with us through conferences. So we know we need to set up some student conferences that all students in a given course and their instructors have access to.

Teachers will use conferences for communications about their individual departments and courses. Setting them up and subscribing teachers will be an ongoing process. However, there are some conferences that all teachers should have access to. These will be conferences dealing with school policy, school announcements, and a general discussion conference where teachers can communicate with each other about various work related issues.

School administrators will also require some conferences. These will be about personnel issues, creating and implementing the school policy, budget, and business plan. Since these conferences will contain confidential material, as will the administrators' Mailboxes, we'll have to set them up so no other users can access them. The only exception to this will be some of our IT personnel. Since we are giving them administration authority, we can't stop them from seeing conferences, but we

can make it difficult for them by implementing some security measures we discussed earlier. See “Adding additional security” on page 13.

Since classes have timetables with key dates (like final exams), each class will need a group calendar so everyone involved can see critical dates. Administrators and teachers will also need personal calendars so they can book meetings and track their individual work activities.

In addition, we want a mailing list with the email addresses of parents.

In the planning section of this book (chapters 7 - 9) we will revisit these requirements and decide how best to implement them. In the creating section (chapters 10 - 16) we will create the FirstClass objects that will help our users use their FirstClass environment most effectively.

Thinking about Model Desktops

Model Desktops control what users see when they log in. Since all of our groups have different needs, we want them to see different things when they log in.

For example, in Avalon Academy:

- we want students to communicate through conferences, so their Desktops will have those conferences clearly visible
- teachers will need to see the conferences important to them
- administrators’ Desktops will have both teachers and administrator conferences on them
- IT personnel will need the same features as teachers with a few extra items to help them do their jobs.

We will return to these examples when we discuss Model Desktops in Chapter 8, “Understanding Model Desktops” and we will walk through examples of adding objects to Model Desktops in Chapter 12, “Adding conferences and conference groups”.

Understanding gateways

A gateway is a bridge between your system and another device or system. FirstClass supports several types of gateways:

- server-to-server gateways
- gateways to other email systems
- outbound gateways
- inbound gateways.

Gateways are configured from the Gateways folder on the administrator's Desktop. There are a number of third-party gateways supporting other systems and hardware. This document explains how to configure a server-to-server gateway. Information on configuring other gateway types will be found in the documentation accompanying those products.

Server-to-server gateways

Server-to-server gateways connect multiple FirstClass servers and FirstClass servers with FirstClass add-on modules, like Internet Services and Voice Services. Using server-to-server gateways, you can set up a large, integrated mail and conferencing network supporting conference replication, Directory synchronization, and multi-hop delivery. Your FirstClass server has built-in server-to-server gateway software.

The main reason for setting up a server-to-server gateway is so users on one server can communicate with users on another. Although the users could connect to the remote server by having a user account on that remote server, it is much more efficient to have users always connect to their local server, and have the servers handle the message exchange. If your users have Internet access, sending messages directly to the receiver's email address is the easiest option.

Gateways to other email systems

Gateways to other email systems connect your FirstClass server to other mail systems such as Microsoft Mail, and cc:Mail.

Outbound gateways

Outbound gateways allow users to send messages out, but not to receive incoming messages. Fax gateways, pager gateways, and printer gateways are examples of outbound gateways.

Inbound gateways

Inbound gateways accept messages from the remote system, but do not allow your users to send replies. Newswire gateways and gateways that retrieve satellite weather map pictures are examples of inbound gateways.

Gateways will be discussed in detail in Chapter 16, “Adding gateways”.

Installing and configuring FirstClass

Installing FirstClass

You can install the FirstClass server and Internet Services on separate machines, or together on a single computer with either a single or multiple processors. The minimum requirements for each scenario are listed below, but, keep in mind, the actual performance of your system will vary depending on how powerful your hardware is and on how busy your system gets.

If you install the FirstClass server and Internet Services on two dissimilar machines, we suggest using the more powerful machine to run Internet Services.

System requirements for FirstClass server and Internet Services on Windows

FirstClass server and Internet Services together

- Pentium class processor
- Windows NT 4.0 with Services Pack 6a, or Windows 2000 Advanced Server

  For MP servers running 1,000 or more concurrent sessions, Windows 2000 Advanced Server is required.

  For sites using network-mounted drives for FirstClass post offices, Windows 2000 Advanced Server is required.
- 64 MB available RAM plus 100 KB for each concurrent session (128 MB plus 250 KB per session recommended)
- minimum 50 MB free disk space, plus additional storage for mail and user data (recommend fast disk subsystems for heavier use)
- Dial-Up Networking for dialup connection support if you do not have a full-time Internet connection (recommend intelligent serial controller for external modems)

Note Modems take away from the system CPU.

FirstClass server only

- Pentium class processor
- Windows NT 4.0 with Services Pack 6a, or Windows 2000 Advanced Server

  For MP servers running 1,000 or more concurrent sessions, Windows 2000 Advanced Server is required.

  For sites using network-mounted drives for FirstClass post offices, Windows 2000 Advanced Server is required.
- 32 MB available RAM plus 100 KB for each concurrent session (64 MB plus 250 KB per session recommended)
- minimum 50 MB free disk space, plus additional storage for mail and user data
- Dial-Up Networking for dialup connection support (if you do not have a full-time Internet connection)

Internet Services only

- Pentium class processor
- Windows NT 4.0 with Services Pack 6a, or Windows 2000 Advanced Server
- 32 MB available RAM (64 MB recommended)
- 8 MB free disk space
- Dial-Up Networking for dialup connection support (if you do not have a full-time Internet connection)

System requirements for FirstClass server and Internet Services on Mac OS

FirstClass server and Internet Services together

- Macintosh PowerPC
- Mac OS 8.6 or higher (for servers running more than 50 sessions 9.0 recommended)
- 32 MB available RAM, 100 KB for each concurrent session (128 MB plus 250 KB for each concurrent session recommended)

- additional memory required if you are mirroring volumes (see "FirstClass server only" on page 31)
- minimum 14 MB free disk space, plus additional storage for mail and user data
- Open Transport 1.3 or higher
- a third-party software router (such as the Vicom Internet Gateway) on the Internet Services machine to handle routing of network and IP traffic for dialup connection support (if you do not have a full-time Internet connection)

FirstClass server only

- Macintosh PowerPC
- Mac OS 8.6 or higher (for servers running more than 50 sessions 9.0 recommended)
- 32 MB available RAM, plus 100 KB for each concurrent session (32 MB plus 250 KB for each concurrent session recommended)
- additional memory required if you are mirroring volumes (amount of additional memory depends on the number of items (files and folders) in your FirstClass post office, approximately 300 bytes per item)
- minimum 12 MB free disk space, plus additional storage for mail and user data
- Open Transport 1.3 or higher (set to Classic Networking mode)

Internet Services only

- PowerPC
- Mac OS 8.6 or higher
- 32 MB available RAM (64 MB recommended)
- 8 MB free disk space
- Open Transport 1.3 or higher (set to Classic Networking mode)
- a third-party software router (such as the Vicom Internet Gateway) on the Internet Services machine to handle routing

of network and IP traffic for dialup connection support (if you do not have a full-time Internet connection).

Installing the FirstClass server and Internet Services

To install the FirstClass server in a Windows or Mac OS environment, insert the FirstClass installation CD and follow the instructions.

While installing the FirstClass server, you will be asked whether to install FirstClass server and Internet Services, FirstClass server only, or FirstClass Internet Services only.

- If you wish to install the FirstClass server and Internet Services on the same computer, select the FirstClass server and Internet Services option.
- If you plan to install the FirstClass server and Internet Services separately, on different machines, select the FirstClass server only option when installing the FirstClass server. Install Internet Services separately by repeating the installation on the other computer. Select the FirstClass Internet Services only option when prompted.

System requirements for FirstClass client on Windows

- 80386 DX processor or higher
- Windows 95 or higher, Windows 2000, Windows NT Workstation, Windows NT Server, or Windows XP
- 4 MB available RAM
- disk space requirements (4 MB for a full installation):
  - FirstClass client software 2.8 MB
  - FirstClass Network Notifier 65 KB
  - FirstClass Personal Application 650 KB (only available in 32 bit)
  - Personal Post Office 35 KB (only available in 32 bit)

Connection requirements

IPX or TCP/IP
- a Network Interface Card (NIC) and the appropriate NIC drivers
- the most up-to-date IPX or TCP/IP network drivers available

Modem
- Hayes-compatible modem, 1200 bps or faster
- *if you are using a high-speed external modem* a cable with hardware handshaking capability
- a 16550AFN UART chip

System requirements for FirstClass client on Mac OS

- PowerPC processor or higher
- Mac OS System 8.5 or higher
- Color QuickDraw

Without FirstClass Personal Application:

- a minimum of 10 MB available RAM (10 MB for Power Mac OS with Virtual Memory off)
- a minimum of 6 MB free disk space.

With FirstClass Personal Application:

- a minimum of 12 MB available RAM (12 MB for Power Mac OS with Virtual Memory off)
- a minimum of 8 MB free disk space.

Connection requirements

TCP/IP
- MacTCP or Open Transport

AppleTalk
- A network card or cables for AppleTalk
- Hayes-compatible modem, 1200 bps or faster
- *If you are using a high-speed external modem* a cable with hardware handshaking capability.

Installing the FirstClass client

As administrator, you can choose to install the FirstClass client on users' Windows or Mac OS machines in any of the following ways:

1. To install the FirstClass client software insert the FirstClass installation CD and follow the instructions.

2. When you install or upgrade to FirstClass 7, a ClientDownloads folder will be created within the Internet Services > WWW folder. Inside this folder are links to the client installers and the readme documents.

   The document uses an X-FC tag to update the home.fc settings file with the Domain name from the System Profile. Once the domain name is added to the home.fc settings file users will be able to connect to your server without further configuration. Users do not need to know the server IP address to connect.

3. If you have a school home page created, the home page document in the WWW folder inside the Internet Services folder can be used by users to link to the downloads page on the Centrinity Inc. web site and download the client.

   Once the client is installed, for the initial login, users should click the login link on the home page to login. An X-FC tag will update the home.fc settings file with the Domain name from the System Profile. Once the domain name is added to the home.fc settings file, users will be able to connect to your server without further configuration. Users do not need to know the server IP address to connect.

For more information about the FirstClass client, see our online help, or *A Teacher's Guide to FirstClass*.

The FCServer/FirstClass Server folder

The FCServer (Windows) or FirstClass Server (Mac OS) folder contains the server and FirstClass Tools applications, as well as all supporting files.

If you installed Internet Services on the same machine as the FCServer (Windows)/FirstClass Server (Mac OS) server, the Internet Services files will also be in the folder. Otherwise, they will be in a FCServer (Windows) or FirstClass Server (Mac OS) folder on the Internet Services machine.

This folder contains the following folders and files:

- FCS.exe (Windows) or FirstClass Server (Mac OS)

  The server application executable.

- FCTools.exe (Windows) or FirstClass Tools (Mac OS)

  The FirstClass Tools application executable. You use FirstClass Tools to license and configure your server, and configure sessions. For information about FirstClass Tools, see *FirstClass Tools Reference*.

- ADMIN.FC

  A settings file that you can use to log into the server as administrator.

- Readme.txt (Windows) or ReadMe (Mac OS)

  A text file containing documentation changes and last-minute information about the server and Internet Services.

- FCP

  A folder containing FCP files. FCP is the protocol used to communicate between the FirstClass client or module and the FirstClass server.

- FCUtil.exe (Windows only)

  The FCUtil application executable, used to automate certain Windows applications.

- Stats files

  A folder containing statistics files built during trash collection.

Internet Services

The following folders and files are also in the FCServer (Windows)/FirstClass Server (Mac OS) folder if you installed Internet Services on this machine:

- fcintsrv.exe (Windows) or FirstClass Internet Services (Mac OS)

  The Internet Services application executable.

- INETSVCS.FC

  The settings file for Internet Services.

- CONFIG

  A folder containing configuration files for Internet Services.

- PORTLIST.TXT

  A list of standard ports.

- cgi-bin

  A folder for CGIs, if you've made any available. The Internet Services administrator will create this file. For information, see *FirstClass Internet Services Administrator's Guide*.

Starting your server and logging in

In order to do any system administration, whether from the server level, or from the client, the server must be running. Most administrative functions you perform will be done when you are logged into the client as the administrator.

Starting your server

The FirstClass server application resides in your FCServer (Windows) or FirstClass Server (Mac OS) folder. It is called FirstClass server and has the following icon on your Desktop:

Double-click the icon or the file to start your FirstClass server.

On a Windows machine, you can also start the application by choosing Start > Programs > FirstClass server.

Server console

When you start the FirstClass server, the server console appears on your screen. There are a number of menu items you can use from this console screen. The same menus exist on Windows and Mac OS with the exception of the Edit menu, which is not available on Mac OS. The Help menu has the usual system specific help options. The following information describes the menu item functions:

File

Exit (Windows) **Quit (Mac OS)**	The same as Server > Polite shutdown.

Edit (Windows only)

The standard system edit items.

Server

Fast shutdown	Forces off all users and shuts down immediately.
Polite shutdown	Sends a message to users and waits until they have all logged off before shutting down.
Broadcast	Send a message to all users logged on.
Force logoff	Disconnect users without shutting down.
Force trash collection	Cause immediate trash collection. See"Manual trash collection" on page 208.
Reset modems	Reset all modems.
Start gateway	Start a gateway immediately.
Show session status	Display the status, on the console, of all sessions.
Show statistics	Display Telecom, Network, CLUI, and server statistics on the console.
Priority	Set the server's priority. For information, see our online help.
Hide server window / Show server window (Mac OS only)	Hide or reveal the server console.
Console to file	Save the console to a file.

Diagnostics

The Diagnostics menu is intended for use by your reseller, or Centrinity Customer Support to resolve technical problems you may encounter. If required, they will explain the use of the menu items.

Logging in as administrator

The FirstClass installation application adds a special user account for the administrator:

- the user ID is admin

- the password is admin
- the name is Administrator.

Warning: To preserve the security of your system, you should change the password for the administrator account as soon as you log in by choosing Collaborate > Change Password. Keep the new password confidential. We recommend that you *not* save the password in your settings file.

Warning: You can change the name, password, and user ID associated with the administrator account, but never delete this account. If you do, you won't be able to log in as the administrator, and you will have to re-install your server.

While you can log into the administrator account using a web-based client, you must use a FirstClass client to perform all administrative tasks.

Registering your server and licenses

When you log in as administrator for the first time, the online registration form will be on the administrator's Desktop. Click the following icon to open it:

You must complete and send this form to Centrinity to get access to online software and documentation updates and to be allowed to post support questions to our customer conferences. You can either email the completed preaddressed form or print the form and mail it to one of the addresses indicated in the message body.

You do not have to complete all the fields on the form and some will already be filled in for you. The help text on the form explains which fields are optional. A copy of this form will be left on your Desktop for your future reference.

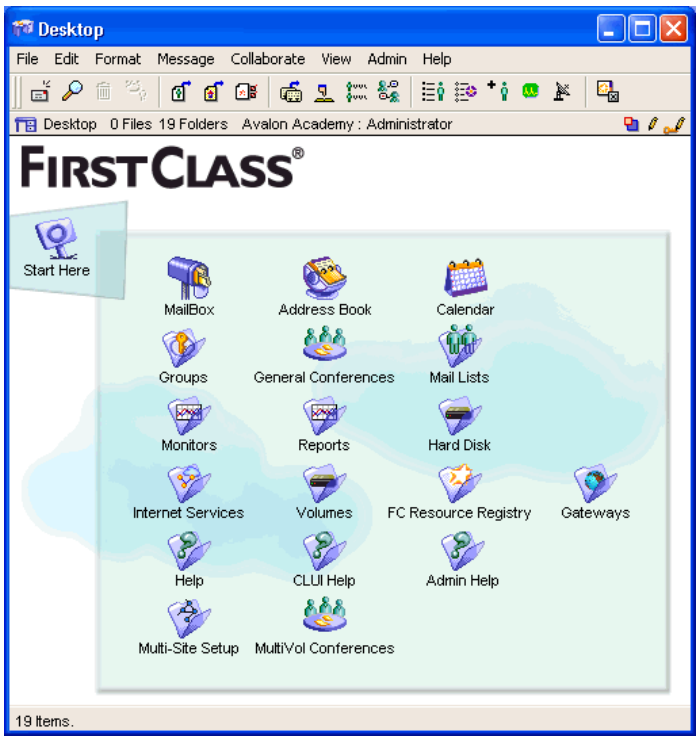
Once Centrinity receives your registration, you will be sent information on accessing our online system and given access to customer conferences.

The administrator's Desktop

In addition to the standard objects that all users see, the administrator's Desktop contains its own set of standard objects.

The administrator's Desktop looks like this:

The administrator's Desktop



Do not delete or rename any objects on the administrator's Desktop. If you do, you might not be able to perform necessary administrative tasks. These objects are protected by default to avoid mistakenly deleting them.

Warning If you delete one of the standard user icons from the administrator's Desktop, that object and all its contents will be deleted and it may be impossible to restore the administrator's link. If you accidentally

delete an object, you can recover it using the undelete feature before trash collection runs.

Desktop objects

- Start here folder

  A folder containing inportant information about setting up and configuring your FirstClass system.

- Mailbox

  This is the administrator's Mailbox where system messages will be automatically sent. We suggest the administrator create a personal user account for non-administrative duties and personal email.

- Address Book

  This is the address book for the administrator's account, for use in sending messages in your official capacity as administrator. Again, we suggest the administrator create a personal user account for non-administrative duties and personal email.

- Calendar

  This is the calendar for the administrator's account. Again, we suggest the administrator create a personal user account for non-administrative duties and personal email and scheduling.

- Groups

  A folder containing all the user and conference groups defined on your server.

- General Conferences

  A folder in which you can add conferences so users can collaborate effectively. These conferences are only visible to users when you subscribe a user to a conference, add a conference to a user group's Model Desktop, or put a link to a conference in a public place.

- Mail Lists

  A folder containing all the public mail lists on your server.

- Monitors

A folder containing the Server Monitor, Session Monitor. and Internet Monitor.

- Reports (Statistics and Billing on legacy systems)

  A folder containing Statistics folder, the Log Files folder, and the Statistics Control form. For more information about the statistics and log files contained in these folders, see Chapter 18, “Monitoring your system”, and our online help.

- Hard Disk

  An external folder that gives you access to the other files on the hard disk containing the post office.

- Internet Services

  A folder where you configure your Internet connections and services.

- Volumes

  Folders containing a list of all the volumes mounted on the server computer.

- FC Resource Registry

  A folder which allows you to store resources such as forms, icons, and sounds on the server, for all your users to access.

- Gateways

  A folder containing the gateways defined on your server.

- Help

  A folder containing the online help files. You can add information to this folder if your users require additional online help material for your system setup.

  The administrator’s help is only accessible from the administrator’s Desktop, and by users in the Sub Admin and Webmasters groups.

- CLUI Help

  A folder containing the Command Line User Interface (CLUI) help text files.

- Multi-Site Setup

A folder containing forms used in setting up networks consisting of two or more servers, using the Directory synchronization feature.

- MultiVol Conferences

  Folders containing a list of all the secondary volumes mounted on the server computer.

- Registration form.

  The online registration form. You must complete and send in this form to get access to product and documentation updates and support conferences. You can either email the preaddressed form via the Internet or print it and mail it to one of the addresses indicated in the message body.

Configuring your system

Much of the information we will need in this chapter you will already have recorded in the table in the "Basic server setup" section of *FirstClass Getting Started*. If you didn't complete that table, you might want to take a moment to do so now or complete it as we go through a basic setup. If you completed all the fields during the server installation process, much of the system setup will already be done.

Configuring the System Profile

To configure your system, you must complete the System Profile form. For a complete explanation of all fields on this form, see our online help. In this chapter, we will complete this form for our school Avalon Academy.

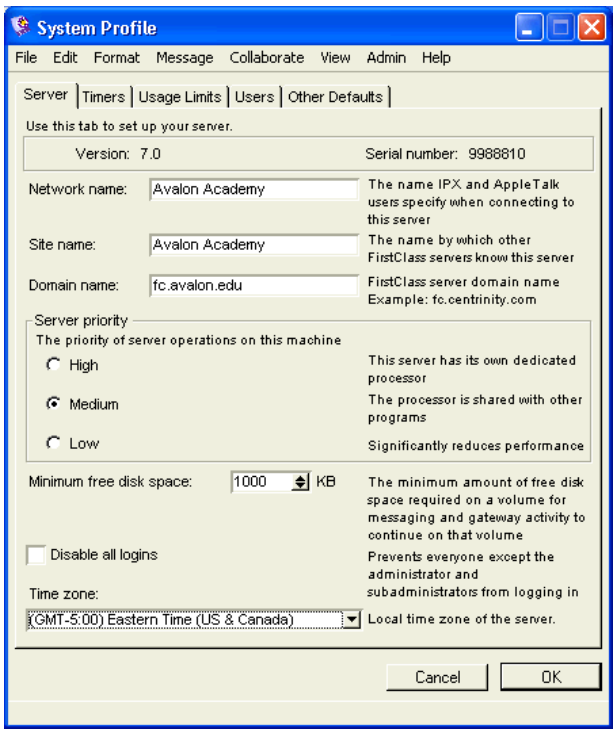
Note You have to log in as administrator using the FirstClass client in order to configure your system.

Many of the settings we will set here can be overridden in other areas. These settings are meant to meet the needs of the majority of users. To access the System Profile, select Admin > System Profile from the administrator's Desktop.

System Profile Server tab

We'll put some basic system information on this tab. We will set a priority level to maximize the efficiency of the FirstClass server and we will learn about the Disable all logins field.

System Profile - Server



For Avalon Academy, we will complete the form as follows:

Network name — Avalon Academy, the name of our school. This is the name network users will specify in their settings files to connect to our server. For more information on modifying settings files, see our online help.

Site name — Avalon Academy.com, this identifies us to other FirstClass servers we establish gateways with. For information about gateways, see Chapter 16, “Adding gateways”.

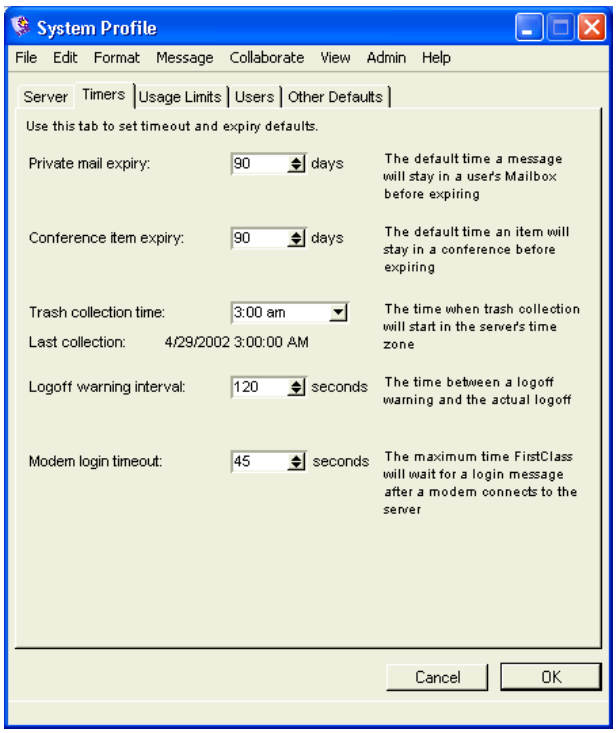
Domain name — fc.avalon.edu, this is our registered domain name and it resolves to the IP address of the computer we have our FirstClass server installed on.

Server priority	Medium, since we have decided to install both the FirstClass server and Internet Services on the same machine.
Minimum free disk space	10000. When the available disk space falls below this level, the volume will go into write protect mode and basic tasks, like creating new messages, will not be performed by the server. We set this value at a point low enough so it won't often be reached, but high enough to allow us some maneuvering room on the volume. Your setting will depend on your hardware configurations.
Disable all logins	We leave this unchecked. If we ever want to perform administrative functions while no users are logged in (for example, major changes to user groups, permissions, or directories), we will check this box. Remember to clear the box or restart the server when you have finished. Since most administrative functions can be performed with users logged in, we won't be using this feature frequently.
Time zone	(GMT-5:00) Eastern Time (US & Canada) This is the local time zone of the FirstClass server. This must be the same as the time zone selected in the server machine's operating system.

System Profile Timers tab

On this tab, we set some rules about deletion and about disconnecting users.

System Profile - Timers



For Avalon Academy, we will complete the form as follows:

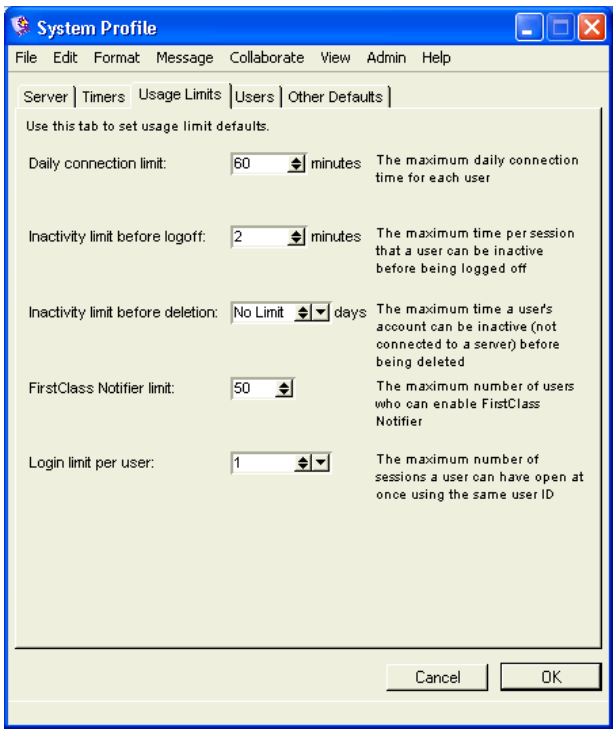
Private mail expiry 90 days, this is long enough that valuable mail won't be quickly lost but short enough that Mailboxes are not overloaded and we don't run out of disk space. Your setting should reflect the usefulness of old mail on your system and the amount of disk space you have available. You can set mail expiry also for individual users or user groups, and you can allow users to change the expiry period of individual messages. See Chapter 7, "Understanding groups, organizational units, and privileges".

Conference item expiry	90 days, many of our conferences contain notices, policies, and procedures that need to be saved for a while. Again, this number should reflect the importance of old mail in conferences and the amount of disk space you have available. The expiry period can be overridden for individual conferences and conference groups. See Chapter 12, “Adding conferences and conference groups”.
Trash collection time	3 AM, because no one is working at that time. Although the server continues to function during trash collection, it’s best to schedule it when use is minimal. See Chapter 19, “Trash collection”.
Last collection	This is the date and time of the most recent trash collection.
Logoff warning interval	120 seconds, we don’t want to wait a long time before logging people off. The server issues warning messages when a user’s time limit is about to expire, or if a user is inactive. For more information, see our online help.
Modem login timeout	45 seconds, we don’t want our modems unavailable for a long time due to a bad connection.

System Profile Usage Limits tab

On this tab, we will enter some settings that will affect users in their day-to-day system use.

System Profile - Usage Limits



For Avalon Academy, we will complete the form as follows:

Daily connection limit	60. Most of our users are students and we don't want them monopolizing access to our server. We will increase specific users' access elsewhere.
Inactivity limit before logoff	2 minutes. We know students often log in to the server and then walk away. We don't want sessions used up, nor do we want the security risk of unattended machines.
Inactivity limit before deletion	No limit. We don't want teachers on sabbaticals or students on work terms having their accounts deleted.
FirstClass Notifier limit	50. The number of teachers and staff we expect to be using FirstClass Notifier. For information, see our online help.

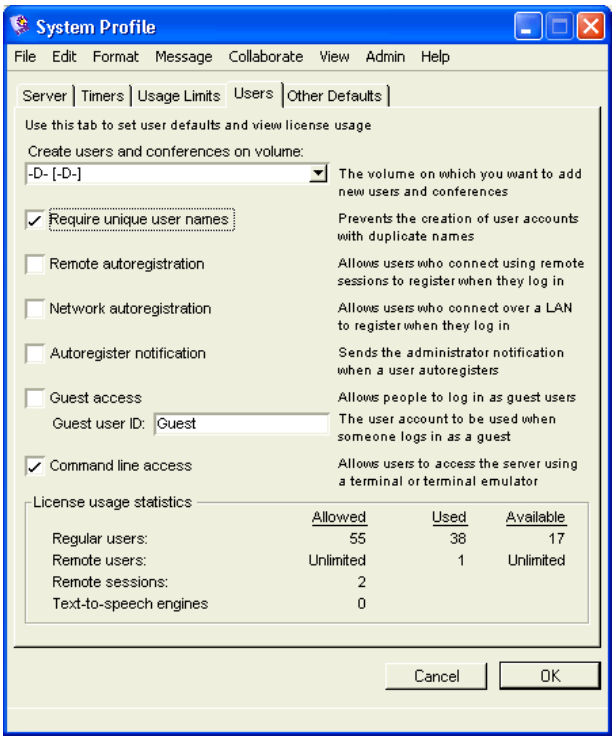
Login limit per user

1. With many users we cannot afford to allow multiple logins.

System Profile Users tab

On this tab, we will make some decisions about how users can access the system and where their data is stored.

System Profile - Users



For Avalon Academy, we will complete the form as follows:

Create users and conferences on volume

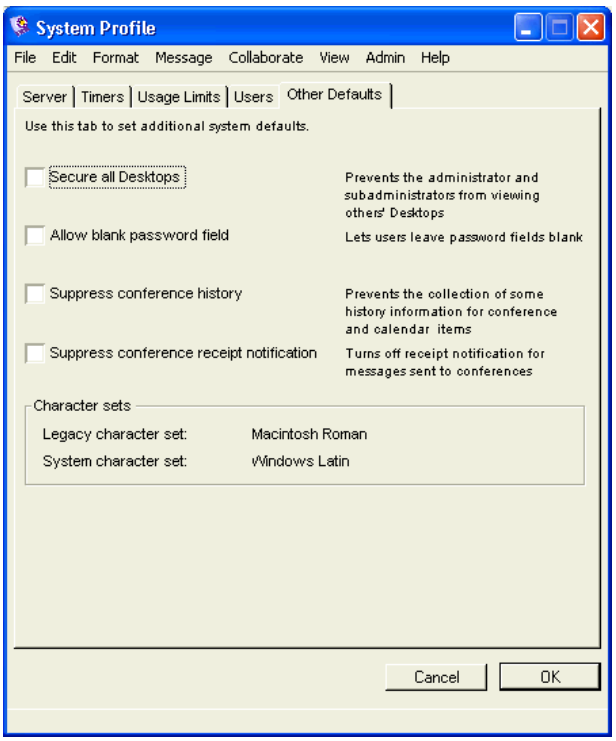
D, the volume we're currently using. For more information, see "Multiple volume considerations" on page 182.

Require unique user names	Yes. Duplicate user names can create confusion and they will make it difficult if we use one of the automatically generated Internet alias options. For more information, see *FirstClass Internet Services Administrator's Guide*. If you are using organizational units and want to permit multiple users with the same name (as long as they are in separate organizational units), clear this checkbox. For information about organizational units, see "Organizational units" on page 76.
Remote autoregistration	No. If we want people to use our system we will give them an account. Unless you have a very good reason to use this feature, don't. It can cause problems since it allows anyone who can connect to your system to register and possibly annoy other users.
Network autoregistration	No. Again, we don't want any autoregistration at all.
Autoregister notification	This is not necessary since we do not allow autoregistration.
Guest access	Yes. This will allow unregistered users to log in and request an account. This gives you a lot more control over who uses your system than allowing autoregistration.
Guest user ID	Guest. We just picked something easy to remember. It can be any valid user ID. You can create a special Desktop for this user ID, with the information you feel guest users need.
Command line access	Yes. We don't really expect people to use it, but there is no good reason to disallow it.

System Profile Other Defaults tab

On this tab, we will make some decisions about security and disk space.

System Profile - Other Defaults



For Avalon Academy, we will complete the form as follows:

Secure all Desktops	No. Although this is a valuable tool, we want to use it for specific individuals.
Allow blank password field	No. Letting users have blank passwords is a security risk.
Suppress conference history	No. History is a valuable feature and we will accept the minimal disk space impact.
Suppress conference receipt notification	No. Again this is a valuable feature and we will accept the minimal disk space impact.

Running your FirstClass server as a Windows service

You may choose to configure your FirstClass server to run as a Windows service. If you choose this option, your FirstClass server will start up and shut down automatically when you start up or shut down your Windows machine. If you simply log off of

the Windows machine, your FirstClass server will not shut down, but will continue to perform normally. This can increase the security of your FirstClass server.

Internet Services and Voice Services do not run as Windows services. If you shut down the Windows machine without correctly shutting down Internet Services and Voice Services, these modules will not shut down correctly, nor will they start up automatically when the Windows machine is restarted. If you log out of your Windows machine where Internet Services and/or Voice Services are currently running, they will not continue to run. Therefore, if you opt to run the FirstClass server as a Windows service, you should install Internet Services and Voice Services on separate machines.

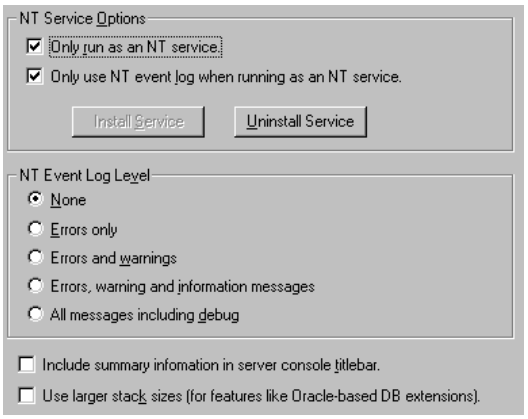
When you install your FirstClass server on a Windows machine, a FirstClass Services control panel applet will automatically be installed in your System32 folder.

How you open the NT Service Options form is dependent on what Windows operating system you are running:

Windows NT or Windows 2000	Control Panel > double-click FirstClass Services.
Windows XP (Classic view)	Control Panel > click Administrative Tools > double-click FirstClass Services.
Windows XP (default, Category view)	Control Panel > click Performance and Maintenance > click Administrative Tools > double-click FirstClass Services.

The FirstClass Services icon looks like this:

NT Service Options



Choose your options from the following table:

Only run as an NT service	Check to prevent users from starting the FirstClass server by running the executable directly. It may help avoid accidently shutting down the server incorrectly when shutting down Windows. If it is run strictly as a Windows service, the FirstClass server will always shut down correctly when Windows is shut down.
Only use NT Event Log when running as an NT service	Check this to stop logging of events to the NT Event Log when the FirstClass server has been started manually.
Install Service	Click to configure the server to run as a Windows service. FirstClass server will appear in the Services list (Start > Control Panel > Services) where it can be started and stopped. You can continue to run your FirstClass server as a normal application by running the FCS.EXE executable directly unless you checked Only run as an NT service.
Uninstall Service	Click to remove from the list of available Windows services.
NT Event Log Level	Select the logging level you prefer. For more information, see “Support for Windows Event Logs” on page 56.

Include summary information in server console titlebar	This will display FirstClass server monitoring information, in an abbreviated format, on the server console titlebar. You can also find this information, in greater detail, by viewing the Server Monitor. See "Checking the Server Monitor" on page 187.
Use larger stack sizes	Do not select this.

Support for Windows Event Logs

FirstClass logfile messages are mapped to Windows events, complete with severity categorizations, standard FirstClass error numbers and descriptions. The control panel allows you to control the severity threshold at which FirstClass messages are added as Windows events. The severity categories are as follows:

Category	Examples of FirstClass error messages in this category
Information	Errors that are normally not logged, such as: 1035 Invalid password 1003 No such user 1040 Can't forward 1036 Can't reply 1049 Daily time limit exceeded 1053 Logins are disabled 1080 Name already in use 1084 Object in use 1093 User has reached/exceeded disk space limit 1096 Must read
Warning	More significant errors, such as: 1044 Server not found 1027 Communication link has failed 1061 Modem has dropped the connection 1092 User session memory limit reached
Error	All other errors of consequence.

For all information about FirstClass error messages, see *FirstClass Error Messages Reference*.

To view the event log, use the standard Windows Event Viewer by selecting Programs > Administrative Tools > Event Viewer

from the Taskbar. Select Log > Application. FirstClass server events will be displayed with a value of "FCS" under the "Source" column. FirstClass server error codes (for example, 1027, 1035) will be displayed under the "Event" column as appropriate. For information about FirstClass error messages, see *FirstClass Error Messages Reference*.

Controlling FirstClass server using Windows Utilities

When installed as a service, you can use the Windows NET command to start and stop the server:

NET START FCS

NET STOP FCS

The PAUSE and CONTINUE commands are supported for post office mirroring. For information on the mirroring feature, see “Mirroring your FirstClass post office” on page 213, and our online help.

NET PAUSE FCS

NET CONTINUE FCS

NET CONT FCS

Programs that include more direct support for Windows services will also automatically include support for controlling the FirstClass server using this common interface.

Advanced topics

When running FirstClass server as a Windows service configured to start automatically, your server will start automatically when the Windows machine is started. The machine does not have to be logged in. If the machine is not logged in, but is started, there will be no desktop, no current user context, and no windows or other user interface elements. Still, your FirstClass server will be running normally (automatically recognizing user logins and logouts, and acting appropriately). If not running as a Windows service, a user logging off of the Windows machine where the FirstClass server is installed will trigger a fast shutdown of the FirstClass server. When running as a service, it will not have any noticeable effect, except, of course, that the server's console

window will not be visible after logout. It is still there, however, and will be displayed if the user logs back in.

It is important to recognize that all of this user interface related functionality is dependent on FirstClass being configured as an interactive service. The FirstClass control panel automatically configures FirstClass as an interactive service when you click Install. When in doubt, it is safe to click Uninstall, followed by Install to reset the server's Windows service configuration to defaults. It can also be inspected or overridden from the standard Windows Services list using the following procedure:

1. Open the Control Panel.
2. Double-click Services.
3. Select FirstClass server.
4. Click Startup.
5. To enable interactive support, select Allow service to interact with desktop.

On this same form, you can configure the FirstClass service to run under the context of a specific Windows user account. This is not recommended. Instead, select System account and then select Allow service to interact with desktop, as described above.

Token ring networks

Although FirstClass 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 server machine to a router that can route packets from Ethernet to token ring. You can use the router built into a NetWare server to do the routing or, for higher performance, you can use a third-party router, such as a Cisco router. This pertains to IPX and AppleTalk only.

Working with firewalls

A firewall is a network security tool used to monitor and guard traffic passing through a network. It usually resides on its own computer. A true firewall does not scan your system for viruses

and trojan horses, nor scan incoming packets for a virus. However, some firewall products are bundled with virus software providing varying levels of virus protection.

There are different types of firewalls, all of which combine hardware and software to achieve maximum protection.

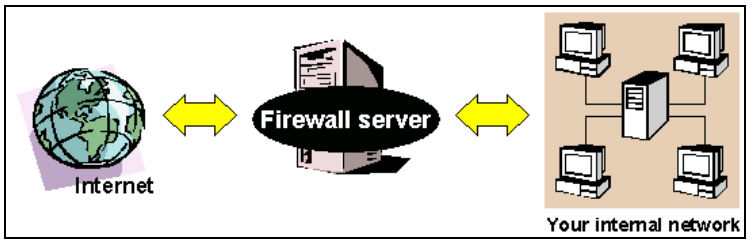
Considerations for choosing a firewall

To configure a firewall that is right for you, consider the following:

- What is the security risk to your network?
- Do you wish to reject specific users? Specific protocols?
- Which requests will you allow (for example, HTTP, Telnet)? Which will you disallow (for example, FTP)?

Firewall architecture

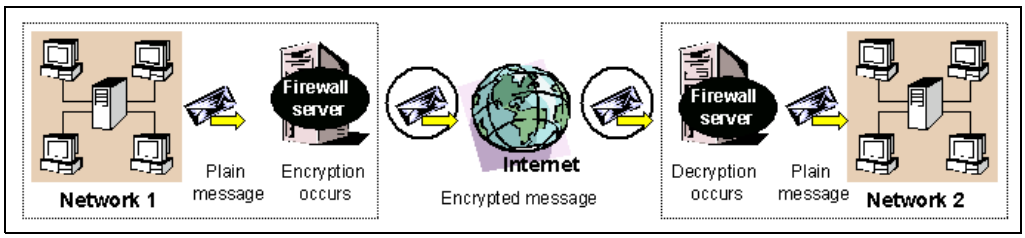
The basic firewall architecture is always the same, with minor variations depending upon the type of firewall you use. Every packet sent from the Internet is first examined on the firewall server. As well, packets sent from your network are also examined on the firewall server. Think of this as the main gate for all traffic, also called the "choke point". It is the computer between the Internet and your network that maintains the security of your system:



Encryption

When two networks are configured to communicate with each other, their individual firewalls can use encryption as another means of keeping your network safe. Therefore, every packet sent from the firewall will be encrypted. The most popular encryption type is RSA (Rivest-Shamier-Adleman). The following is an example of a network communication where the

message is encrypted on the firewall server at the local network, then decrypted on the firewall server at the remote network:



Types of firewalls

There are three main types of firewalls:

- network-level (first-generation firewall technology)
- circuit-level (second generation)
- application-level (third generation).

Each type of firewall uses a different technique to protect your network. A network-level (or packet filter) firewall analyzes network traffic at the transport protocol layer and compares it to a predefined set of rules that indicates which protocols are allowed.

A circuit-level firewall takes this one step further and validates that a packet is either a connection request or a data packet belonging to a connection between two peer transport layers. This is done by examining each connection setup, and then comparing the connection to a table of valid connection that includes complete session state and sequencing information.

An application-level firewall provides more detail than the other types. It evaluates individual network packets for data at the application layer before allowing a connection. It examines the data in all network packets and maintains complete connection state and sequencing information.

Network-level firewalls

A network-level firewall is commonly known as a screening router. This may also be called a screening ritzer or a packet filter firewall. This is a lower-level firewall that screens packets. Basically, it examines packet addresses to determine whether to

pass the packet to the local network or to block the packet from entering.

Because the packet includes both the sender and recipient's IP address, you can block all incoming or outgoing packets to that specific computer. To do this, you would create a file, sometimes called a black list or an accept and deny list, and populate it with IP addresses (most common filter). The router will check this file each time a connection is requested and block the connection if the incoming IP address matches a listing.

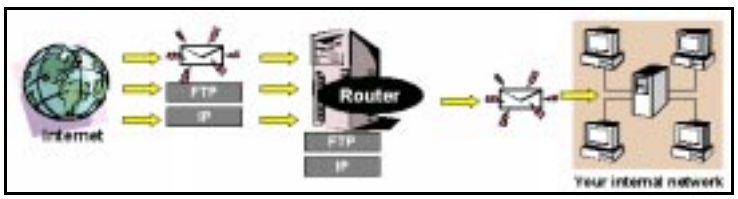
Usually the check will only be performed if the specified user is trying to connect to a service that is disabled by the firewall. In most cases, a screening router filters based upon these rules:

- source address from which the data is coming
- destination address to which the data is going
- data protocol (for example, TCP, UDP or ICMP)
- source and destination application port for the desired service
- whether the packet is the start of a connection request.

The network-level firewall, if installed properly, will be almost transparent to users, unless they try to perform a blocked action.

FirstClass Internet Services has a built-in security feature that performs filtering, thereby acting as a network-level firewall for Internet protocols. For more information, see *FirstClass Internet Services Administrator's Guide*.

A network-level firewall resembles the following:



In this example, the router rejects specific users based upon an IP address and host, as well as requests for FTP (File Transfer Protocol) services, which would include uploading and downloading files.

The router performs packet-filtering (based upon rules that you specify) independent of the application layer. This means that screening routers let you control your network and its traffic without making changes to your client/server applications.

Stateful Inspection

Another type of network-level firewall is Stateful Inspection, an architecture that is an extension of the basic packet filtering architecture employed by most routers. Stateful Inspection occurs at the Network Layer, making it fast and preventing suspect packets from travelling up the protocol stack. Unlike static packet filtering, however, Stateful Inspection makes its decisions based on all the data in the packet (corresponding to all the levels of the OSI stack). The state of the connection is monitored at all times, allowing the actions of the firewall to vary based on administrator-defined rules and the state of previous sessions. In effect, the firewall is capable of remembering the state of each ongoing session across it, allowing it to effectively screen all packets for unauthorized access while maintaining high security, even with connectionless protocols such as UDP.

A disadvantage of network-level firewalls is the lack of alerting and auditing applications. Therefore, when the screening router filters out a packet, it will not notify the administrator. Higher-level firewalls, such as the application level firewall, are designed to filter protocols and report rejected requests.

On many systems, the network-level firewall is only the first line of defense. Because it does not handle many protocols, an additional filter is required.

Circuit-level firewall

A circuit-level firewall usually consists of a host computer running proxy-server software. This computer is called a proxy server. Proxy servers communicate with servers outside the network, thereby controlling traffic between two networks.

A circuit-level firewall is similar to an application-level firewall, in that both are proxy servers. The difference is that a circuit-level firewall does not require special proxy–client software applications. A circuit-level firewall creates a circuit between a

client and a server without requiring that either application know anything about the application that is used.

Basically, this means that a client and server can communicate across the firewall without communicating with the firewall. This ensures the firewall protects the transaction's commencement without interfering with the ongoing transaction.

The advantages of a circuit-level firewall are:

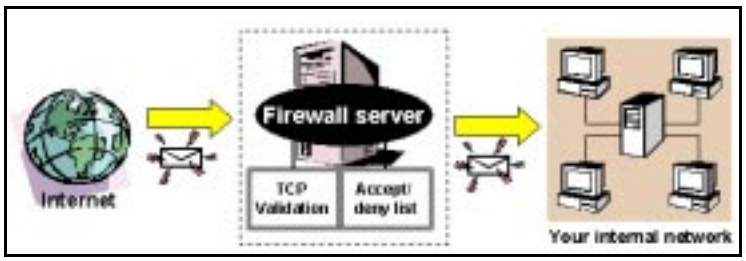
- it provides service for a wider variety of protocols
- it is faster because it performs fewer evaluations
- you can use it in conjunction with network address translation to shield internal IP addresses from external users.

The disadvantages of a circuit-level firewall are:

- it cannot restrict access to protocol subsets other than TCP
- it cannot perform strict security checks on a higher-level protocol
- it has limited audit event generation abilities.

Similar to the network-level firewall, a circuit-level firewall uses a blacklist, or an accept and deny list that contains valid connections (including complete session state and sequencing information). Incoming sessions are first examined to ensure they use a legitimate transport layer protocol (TCP). After the handshake is complete, the network packet information is examined against the accept and deny list. If a match is found in the accept list, the packet is permitted. The virtual circuit that is opened upon connection remains open for the duration of the connection.

A circuit-level firewall resembles the following:



Application-level firewall

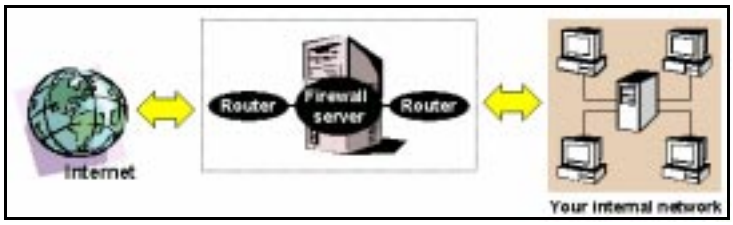
As previously stated, an application-level firewall consists of a proxy server communicating with servers outside the network to control traffic between two networks.

When you use an application-level firewall, your local network does not directly connect to the Internet. Instead, the proxy server transfers an isolated copy of each approved packet from one network to another, whether the packet contains incoming or outgoing data. The result is that the firewall effectively masks the original address of the initiating connection and protects your network from intruders who may attempt to obtain network information.

In other words, proxy servers are used to hide your IP address, making you anonymous on the Internet. The downfall is that hackers can also use this "service" to hide their IP addresses when attacking a specific server.

Because proxy servers recognize network protocols, you can configure your proxy server to control which IP services you want on your network. There are many types of proxy servers available. Each protocol that you screen for requires a new proxy server entry (unlike a screening router).

An ideal scenario is one in which the screening router and the firewall run simultaneously to filter out packets and protocols. A system that uses both a screening router and a firewall resembles the following:



Although positioning the firewall between an external (closest to the Internet) router and an internal router provides little additional protection from attacks, it greatly reduces the amount of traffic that the firewall server must evaluate, which may increase the firewall's performance. Without a filtering router behind the firewall server, the firewall server would have to process every packet distributed on that subnet, even if the packet is destined for another internal host.

Proxy servers are a good choice for environments that require high security. Because the auditing and filtering is performed by an actual application, the proxy is slower than a network-level firewall. Therefore, the application-level firewall should be placed on the fastest computer host in your network (after the FirstClass server and FirstClass Internet Services computers are selected).

The FirstClass client supports only the SOCKS4 proxy interface directly. Client use through a firewall should be in one of two configurations: NAT (Network Address Translation), or SOCKS4.

Network Address Translation

Network Address Translation (NAT) is a facility included in most recent proxy servers (also called software routers) that translates an IP address used within one network to a different IP address known within another network. It is often part of a corporate firewall; it ensures security, because each outgoing or incoming request must go through a translation process that also offers the opportunity to qualify or authenticate the request or match it to a previous request.

NAT is much more transparent than other proxy mechanisms, allowing virtually all applications (including proxy-unaware

applications) to connect to other services through the NAT-based proxy server. It supports both TCP/IP and UDP/IP (connectionless protocol) communications.

To configure the FirstClass client to use NAT, simply set the client machine's network gateway to the NAT router machine. This is an operating system setting; therefore, no FirstClass configuration is required.

Note NAT is used mostly for outbound client machines on a private network that will connect to the Internet. From a client perspective, NAT is the preferred approach. However, it would not be appropriate for a server on a private network.

SOCKS4

A SOCKS (also "socks") server handles requests from clients inside a company's firewall and either allows or rejects connection requests based on the requested Internet destination or user identification. Once a connection and a subsequent "bind" request have been set up, the flow of information exchange follows the usual protocol (for example, HTTP).

SOCKS4 is a proxy server interface for client programs that supports TCP/IP only. Under this scenario, the proxy server is configured to relay SOCKS4 connection requests to a server machine.

Note FirstClass does not support SOCKS5.

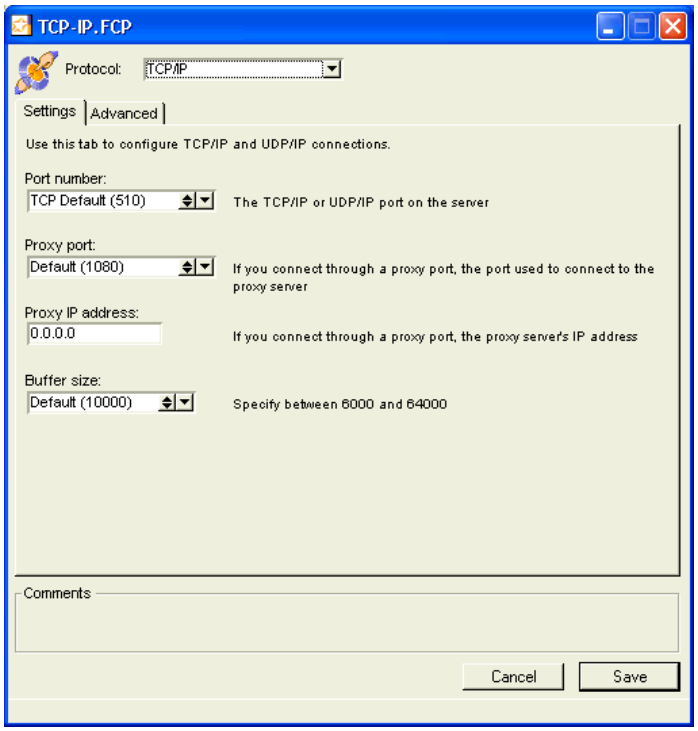
To configure FirstClass under SOCKS4:

1. Click Setup on the Login form.
2. Specify the server machine as usual.
3. Choose TCP/IP.
4. Click Configure.
5. On the Settings tab, choose:
   - TCP Default 510 at Port number.
   - Default (1080) at Proxy port.
   - 0.0.0.0 at Proxy IP address.

Note Anything other than 0.0.0.0 in the proxy server field tells the client/outbound connections to be diverted to that address, informing the proxy server of the desired address using the SOCKS4 interface.

- Default at Buffer size.

6. Save the settings.



The proxy server then relays the connection request to the desired IP address on the client's behalf. In addition to knowing the proxy server's IP address, the client software also has to know what port the proxy server is listening on, much like the client must specify port 510 to talk to our servers (see “Ports requirements” on page 69).

In order to configure the FirstClass server to work behind a firewall, it is necessary to open the appropriate connections on the firewall (see “Ports requirements” on page 69).

Any ports specified in the NETINFO file, or by the defaults for the NETINFO port configuration, must be supported by the SOCKS4 proxy server. This typically means port 510 must be accepted for relaying by the proxy server (referred to as "open"). To use additional ports (such as both TCPGUIPORT and TCP**R**GUIPORT) listed in the NETINFO, the proxy server would have to be configured to open these ports.

Port 23 is the Internet "telnet" program's port, which is used for the CLUI interface. To use the CLUI through a proxy server, you need a telnet program or terminal emulation program (for example, Procomm Plus or HyperTerminal) that supports proxy connections to a TCP telnet host. If you use CLUI, the FirstClass client software and FCP protocol are not involved. Communication occurs between the terminal program and the proxy server. For example, the terminal program and proxy server may support SOCKS5, and they could use that to connect over the CLUI.

If FirstClass Internet Services is on the outside of a firewall, the proxy server will need to include the Internet ports it supports in the list of ports opened for external access. This is usually set already, as it was for telnet, because most proxy servers have default configurations that open port 25 (SMTP), port 80 (HTTP), port 110 (POP3), port 119 (NNTP) and other common Internet ports.

Because FirstClass Internet Services and the server can run on two different machines, it is possible to place Internet Services on the public/Internet side of the proxy server, leaving the core server on the private side.

Some sites choose to isolate their server from the Internet, requiring a SOCKS4 proxy for FirstClass client connections, including possibly a SOCKS4 connection to the server from Internet Services over port 510 or another port. This scenario does not add security; the server is secure in either case.

Performance versus security

A common dilemma when deciding upon a firewall is determining the trade-offs between performance and security. You must consider the path a packet travels, and the level of

security checks that are being performed on each packet. Network-level firewalls generally provide the highest performance, followed by circuit-level firewalls, and then application-level firewalls.

The level of security checks generally follows the reverse pattern because, as network packets pass through more protocol layers, they are inspected in more detail. As a result, application-level firewalls are considered more secure than network-level firewalls, which are considered more secure than circuit-level firewalls. However, because a circuit-level firewall does not perform extensive security checks, it often performs faster than a network-level firewall that contains a large set of accept and deny rules.

In general, application-level firewalls are the slowest architecture because each packet is treated as two separate network sessions and they implement the broadest set of security data checks, increasing the required processing time. Throughout the industry, however, application-level firewalls are generally considered to provide the best security.

Ports requirements

The following table lists the port number that must be open for each connection type when setting up your firewall:

Port	Connection type	Description
21	FTP	Ensure this port is accepted for relaying (referred to as "open").
23	CLUI/Telnet	Ensure this port is open. This is the Internet "telnet" program's port, which is used for the CLUI interface.
25	SMTP	Ensure this port is open on the firewall for two-way communication. It is usually the default configuration on the proxy server.
53	DNS	Ensure this port is open. Although we do not support DNS, we need to connect to DNS servers on this port.
79	Finger	

Port	Connection type	Description
80	HTTP	Ensure this port is open on the firewall for two-way communication. It is usually the default configuration on the proxy server.
110	POP3	Ensure this port is open on the firewall for two-way communication. It is usually the default configuration on the proxy server.
119	NNTP	Ensure this port is open on the firewall for two-way communication. It is usually the default configuration on the proxy server.
143	IMAP	
389	LDAP	
443	HTTPS	
510	TCP FCP	Ensure this port is open on the proxy server on firewall for two-way communication. To use additional ports (such as both TCPGUIPORT and TCP**R**GUIPORT) listed in the NETINFO, the proxy server would have to be configured to open these ports.
810	UDP FCP	This port is used for IP Network Notifier.
3000	FCP	FirstClass client Legacy TCP port (not required with newer client versions)

Planning your FirstClass environment

Understanding groups, organizational units, and privileges

FirstClass provides the opportunity to customize user limits and privileges in the way that best fits your organization. You can set privileges once to satisfy all users, or you can set privileges at the group or user level for a more flexible system customized to the needs of each user or group of users. Privileges are an important security feature in FirstClass and, if used effectively with Directory filtering, can help you create a safe and worry-free collaborative environment.

In this chapter we will discuss the standard user groups and how privileges are set. Group privileges are set on the Group Privileges form, while individuals' privileges are set on the Features and User Limits tabs of the User Information form. Later, in Chapter 11, "Creating and customizing user groups", we will discuss specific user groups' needs, and in Chapter 14, "Adding users", we will give specific privileges to selected users.

Standard user groups and how they work

When you install your FirstClass server, it automatically creates several standard user groups. FirstClass automatically adds users to these groups as required. While not all of these groups are displayed in the User Groups section of the User Information form, users still belong to them based on eligibility. The following are the standard user groups and a list of users belonging to them.

Warning: Do not delete or rename any of the standard user groups. Deleting these groups can lead to unpredictable system behavior and system damage. If you delete one by mistake, recreate it

immediately with exactly the same name and restart your server.

All Users

Everyone who logs into your system is a member of the All Users group. It is a good idea to set base system defaults at the All Users level and then give or remove permissions and privileges from that starting point. This results in a system which is much easier to track and administer. The All users group will never be listed on the Groups tab of a user's User Information form since all users belong to this group.

Regular Users

This group is made up of all users defined as Regular in the Class field of the User Information form. By default, all regular users will have Regular Users listed first in the list of groups to which they belong on the Groups tab of the User Information form. Never delete this entry. Enter all other groups below this entry.

Remote Users

This group is made up of all users defined as Remote in the Class field of the User Information formBy default, all regular users will have Regular Users listed first in the list of groups to which they belong on the Groups tab of the User Information form. Never delete this entry. Enter all other groups below this entry.

Offline Users

This group is made up of all users using FirstClass Personal. This is a temporary group and users will only belong to this group for the time they are using the FirstClass Personal application.

Unauthenticated Users

This group is made up of users accessing your system via unauthenticated HTTP, Finger, or LDAP protocols, or users accessing your system using a web browser to visit a user's website. This is a temporary group and users will only be a member of this group until they log into FirstClass.

Note If this group is missing from your post office when you start your server, you will receive a warning. If this group does not exist in your Groups folder, create a new group and name it Unauthenticated Users.

Other Sites

This group is made up of gateways and users on remote servers only.

All Conferences

This group contains all conferences configured on your system. It is a good idea to set default conference permissions at the All Conferences level and then give or remove permissions for conferences and conference groups from that starting point. This results in a system which is much easier to track and administer. The All conferences group does not apply to any Mailboxes on your system.

All Calendars

This group contains all calendars configured on your system. It is a good idea to set default conference permissions at the All Calendars level and then give or remove permissions for conferences and conference groups from that starting point. This results in a system which is much easier to track and administer.

All Mailboxes

When you install FirstClass, this group may not be created in the Groups folder by default. If it is not there, we suggest you create a new conference group in the groups folder and name it All Mailboxes. This group contains all user Mailboxes configured on your system. It is a good idea to set default Mailbox permissions at the All Mailboxes level and then give or remove permissions for Mailboxes from that starting point. This results in a system which is much easier to track and administer.

Note All folders on user's Desktops inherit the user's Mailbox permissions. If the user has no personal Mailbox permissions defined then the folder's contents will inherit the expiry period set at Conference item expiry in the System Profile.

Legacy systems' groups

Several more standard user groups were installed by default in FirstClass systems prior to FirstClass 7. If you want to recreate these standard groups, simply create a group and give it the name of the legacy standard group. The group will function the same way it did previously.

Override groups

Some standard user groups are specified as override groups. These are temporary groups to which users are assigned based on access method.

The override groups are:

- Unauthenticated Users

- Autoregistered Users
- Offline Users.

The Autoregistered Users group can have a Model Desktop, Offline Users and Unauthenticated Users cannot.

The values set on the Group Privileges form for those groups override the values that are currently set for the user's other groups and the System Profile. The privileges set for these groups can be overridden on users' User Information forms.

For example, if you set a connection limit of Unlimited on the All Users Group Privileges form, but you want all autoregistered users to be limited to 30 minutes, set this value for the Autoregistered Users group on the Connection limits tab of the Group Privileges form.

Keep in mind that anything you enter on a individual's User Information form overrides all other settings.

Organizational units

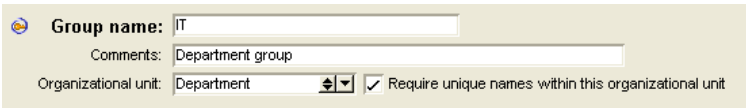
An organizational unit is, quite simply, just another way to use user groups to organize your system for easier identification of users and/or to allow duplicate Directory entries (user names or conferences). Organizational units are not required in setting up your FirstClass system, but can play an important role in organization and security, especially in complex FirstClass systems with many users.

Warning Do not assign organizational units to Standard groups.

If you are using batch administration to configure your system and users, the SETOU command can be used to define the organizational unit. For information, see our online help.

When configuring your system from the administrator's Desktop, organizational units are defined on the Group Privileges form:

Organizational unit



Organizational units are set at different levels, but the organizational unit does not determine the hierarchical role of the members. A user can be a member of several organizational units. The most user-specific organizational unit is the user's Primary organizational unit. The Primary organizational unit can be (but does not need to be) a member of a larger organizational unit, like an umbrella structure. Organizational units classify groups of users according to their role in the organization, not according to their levels.

Note A user's privileges and permissions are not inherited from one organizational unit to another. You must specifically assign the user to each group in the proper order on the User Information form.

For example, Avalon Academy has the following divisions:

- employees
- faculty
- school admin
- IT
- students
- teachers.

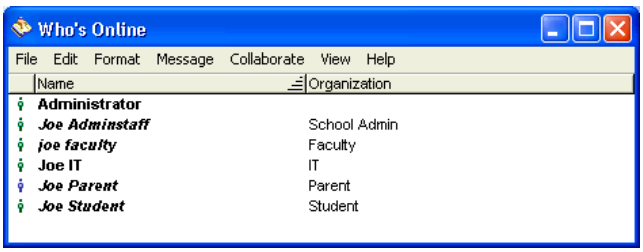
The faculty, school admin, IT, students, and teachers groups are distinct divisions within our school structure and each user on our system belongs to one of them. Therefore, these groups will all be given the organizational unit level of Department.

Even though we decided that employees was a logical division in our school, we still haven't given the employees group an organizational unit level. Since this group contains most, but not all, of Husky Planes's users and it contains members of other organizational units (some, but not all the departments —

students and parents are not employees), we will choose the organizational unit level of School.

When you list the Directory, the user's Primary organizational unit is displayed. A user viewing the Directory, or Who's Online, can easily determine what department another user is in.

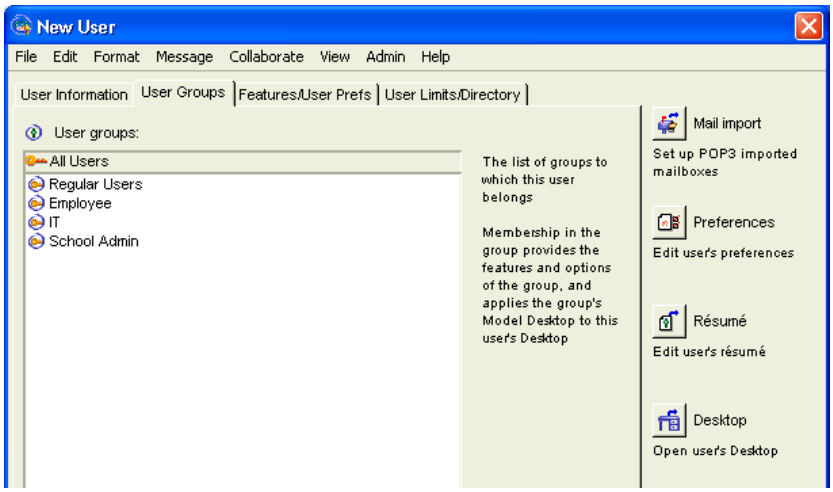
Organizational units in Who's Online



In this example, Joe Employee is not a member of any specific department so his Primary organizational unit is Employee. Although Joe Adminstaff and Joe IT are both employees (and members of the Employees organizational unit), their Primary organizational units are listed.

If a user belongs to two Primary organizational units (School Admin and IT, for instance), the one listed closer to the top of the user groups list on the user's User Information form will be the one that is displayed. In the following example, Joe IT is also an administrator and is a member of the School Admin organizational unit:

Duplicate Primary organizational units



In the Directory, Joe IT will be listed as IT, not School Admin.

Conferences in organizational units

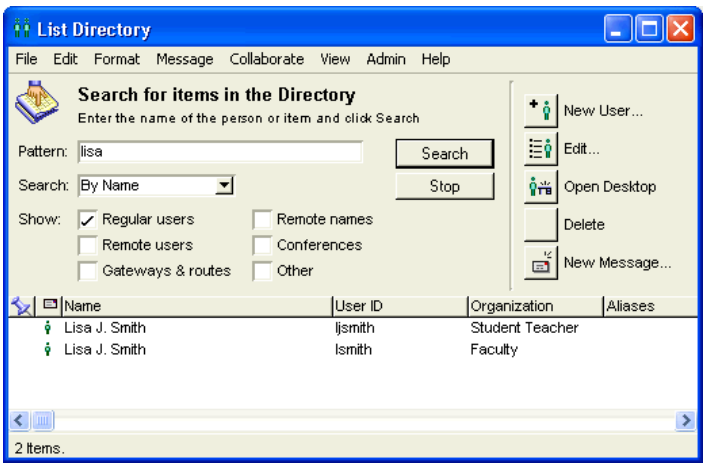
Conferences and conference groups created by the administrator on the administrator's Desktop do not belong to an organizational unit. However, administrators can set the conference or conference group organizational unit using the batch administration SETOU command. For information, see our online help.

The user inherits the organizational unit of his Primary organizational unit. If you have given your users permission to create conferences, any conference a user creates will inherit the user's Primary organizational unit.

Organizational units and duplicate Directory entries

As stated earlier, organizational units allow you to have multiple Directory entries. If you select Require unique names within this organizational unit, you can have two people with the exact same name in the Directory as long as they are in separate organizational units. For instance, if you have a Lisa J. Smith in the Student Teacher area, you can also have a Lisa J. Smith in Faculty. When you list the search for Lisa J. Smith in the Directory, you will see the following:

Duplicate Directory entries



You cannot have duplicate names within the same organizational unit. If Lisa J. Smith is promoted from Student Teacher to Faculty, you will have to change her name in the Directory (Lisa Julie Smith, for instance).

Note You can never have duplicate userids.

Using organizational units in a multi-tenant environment

The flexibility organizational units adds to your system is best seen when used in a multi-tenant environment. This is a configuration in which there is more than one independent system running on a single FirstClass server. These systems are entirely independent of one another, and users on one system can never see users on any other system in the Directory.

The following is an example of using organizational units in a multi-tenant environment:

Avalon Academy is a school in Separate School District 21. Separate School District 21 wants to run its office, Avalon Academy, and other schools on one FirstClass server, but it still wants to maintain each school and its office as separate entities. They do not want to share information, communication, or Directory listings between the schools or the district office. While they will share a FirstClass system, they will be entirely separated from each other. The FirstClass administrator will use

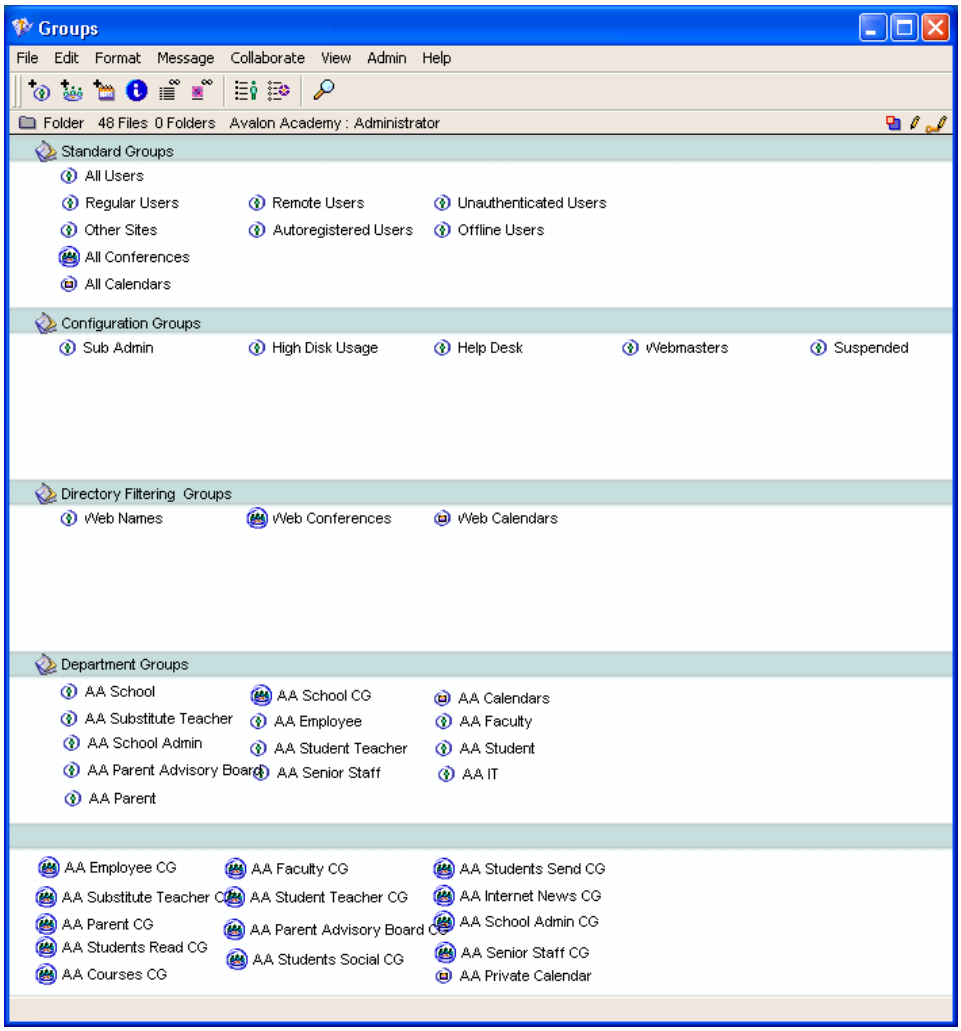
organizational units and Directory filtering to accomplish this as follows:

In the Groups folder:

1. Do not change any of the Standard, Configuration, or Directory Filtering groups. Any settings or overrides set for these groups will apply to all applicable users on your system.
2. In the Department groups section, rename the School group to AA School. This will be the master group to which you will add every Avalon Academy user.
3. Create a new conference group called AA Conferences and a new calendar group called AA Calendars. These will be the master groups to which you will add every conference and calendar respectively for Avalon Academy.
4. Rename all Department groups, Conference groups and Calendar groups to be specific to Avalon Academy. For instance, rename Faculty to AA Faculty, and Students to AA Students.

   You may want to group all Avalon Academy groups in one area of the Groups folder to make organization easier as your system grows.

At this point, the Groups folder will look something like this:



5. Set the organizational unit levels of the AA groups:

   Set the AA School organizational unit level to School.

   Set all other AA groups organizational unit levels to Grade, Class, Group, or Team, as appropriate.

6. Avalon Academy will have a different domain name than the school district office and all other schools in the district. On the Services tab of the AA School Group Privileges form,

enter Avalon Academy's unique registered domain name at Domain name. All the Internet aliases for members of this group will default to this domain name.

If you will not have separate domain names for your multiple tenants, do not enter the domain name here.

Notes If a user is a member of multiple organizational units and more than one of them has a domain name, the domain name for the user's Primary organizational unit will be used.

If you have multiple domain names, remember to include them on the Multiple Sites and Languages form. For information see *FirstClass Internet Services Administrator's Guide* and our online help.

7. Do not set up Directory filtering for AA School, AA Conferences and AA Calendars.

8. Set up Directory filtering for all other AA groups as follows:

On the Directory tab, at Allow this group to view these groups, enter AA Users, AA Conferences, AA Calendars.

Note You can filter the Directory more if you like, but ensure these are listed first.

Some things to remember:

- Ensure that any user added to the Husky Planes system is made a member of the AA School group. List this directly after the class of user group on the Groups tab of the User Information form.
- Ensure that every conference on the Avalon Academy system (and any conferences you add to the Avalon Academy system later) is made a member of the AA Conferences conference group.
- Ensure that every calendar on the Avalon Academy system (and every calendar you add to the Avalon Academy system later) is a member of the AA Calendars groups.

- When a user creates a new conference, the user's organizational unit is inherited to the conference, so the Directory filtering rules will be applied automatically.

9. Create a Department group structure for Separate School District 21 using the same principles used for Avalon Academy.

Notes Preceed all user, conference, and calendar groups, as well as all conferences and calendars with D (for District) to distinguish them as being solely for the school district office.

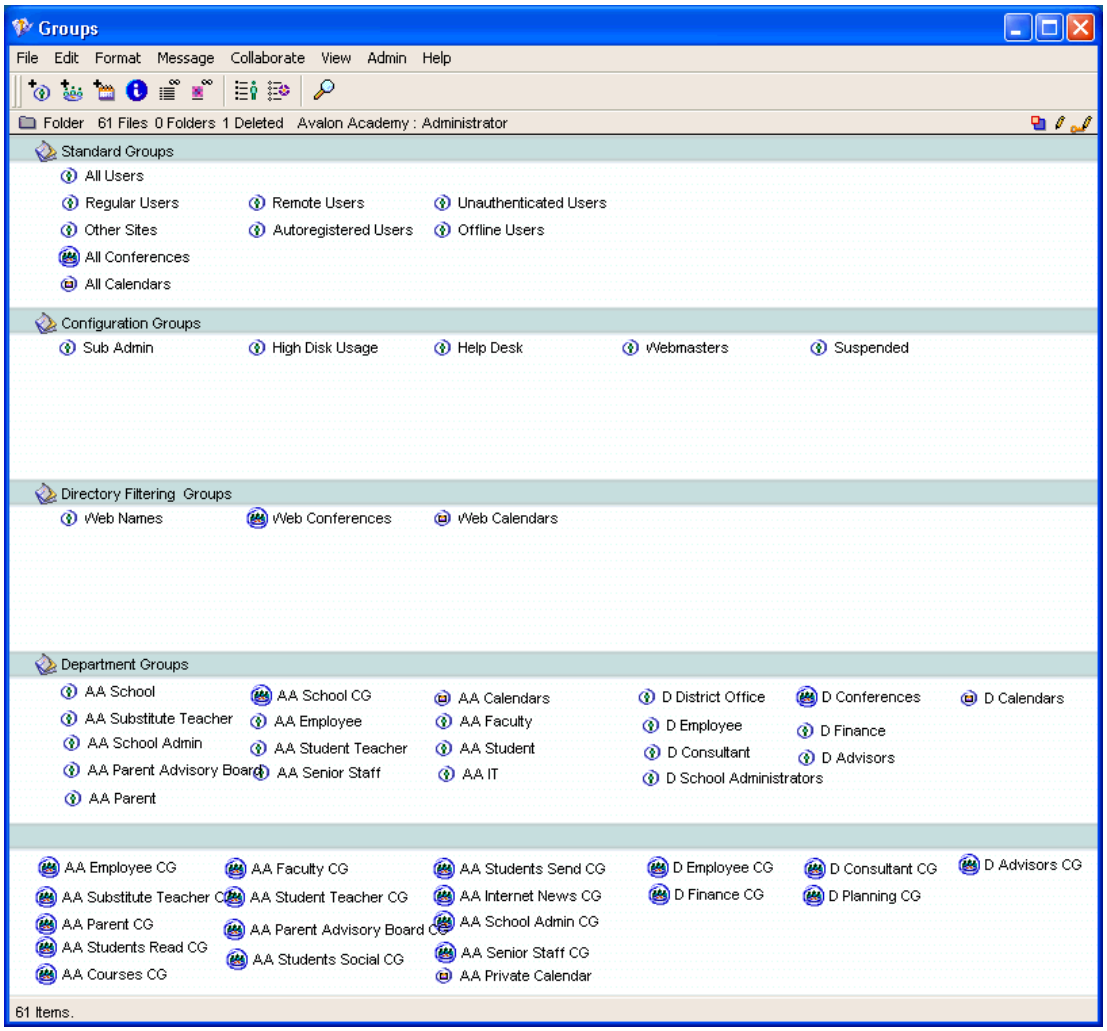
Instead of having a group called School, name the group something like D Office. Give this group an organizational unit level of District.

All other D groups should have logical organizational unit levels set.

Remember to make all school district users members D Office, all school district conferences members of D Conferences, and all school district calendars members of D calendars.

The Separate School District 21/Avalon Academy multi-tenant environment Groups folder will look like this when complete:

Multi-tenant Groups folder



No user configured as a member of AA School can see any user in the D Office group. All Avalon Academy conferences and calendars are hidden from all school district users, and vice versa. With the Directory partitioned in this way, they can function as two completely independent systems, apart from the server administration. Any tracking and billing can be done at the school level (or district, group, or user level), instead of at the All Users level, making this a true multi-tenant environment.

If you want some collaboration between the school district and the schools, you can set up conferences and user groups that span the separate environments you have created.

Using Designer to edit organizational unit levels

If you want to edit the names of the organizational units, or add more levels to better fit your organization, use FirstClass Designer. For basic information about editing forms using designer, see *FirstClass Designer*, or our online help.

The server reads the organizational unit as a number only. If you open the Group Privileges form using Designer and look at the organizational unit dropdown list, you will see that each level has a number beside it. You can edit the wording beside the number, or you can even edit the numbers. As well, you can add additional choices to this list. The numbers are merely a way for the server to read the written information. Valid numbers are between 0 and 800.

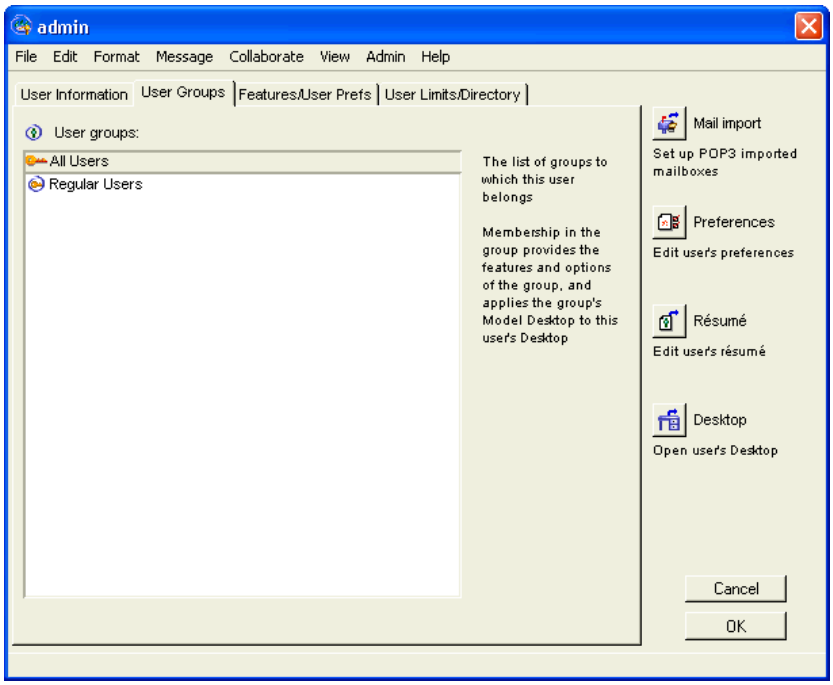
How group and user privileges are set

While privileges and how they are set may seem complicated, they actually follow a few simple rules. First, let's look at a User Information form and see how user groups are listed. Since you haven't added any users yet, we'll have to look at the administrator's account.

1. Select Admin > List Directory.
2. Enter Admin in the Pattern field.
3. For Search select By Name.
4. Check Regular Users.
5. Click Search.

   Since only one name will come up, it will be preselected.
6. Click Edit.
7. Select the User Groups tab.

Admin user groups



As you can see, the administrator currently belongs to only one visible user group, Regular Users. However, everyone who logs into your system is also a member of the All Users group.

Since everyone belongs to All Users, it's simplest to set system wide settings there. You can alternatively use the privileges and the Model Desktops of the class of user groups to control what users see. Since all users are either Regular or Remote, you can modify those groups to control features for everyone.

When FirstClass sets features for each user, it looks at the following items in the following order:

- the System Profile
- the All Users group
- the class of user group (Regular users or Remote users)
- the groups you have created and added the user to in the order in which they appear in the User Groups field

- the User Information form.

The key things to remember are:

- every setting in the User Information form overrides what was set before
- user defined groups override those groups that came before them.

Therefore, you should take care in the order in which you place your user groups. The tristate checkboxes on the user group indicate whether a setting has been changed or left as previously defined. The User Information form has two checkboxes, one is a tristate box used to change the setting, the other is a display only field indicating the current setting. From the User Information form, you can determine exactly what features each user has.

Setting the All Users group defaults

Before you begin giving privileges and access to groups and users, you should set your defaults on the All Users form. These settings will be the default, or unchanged state, in the tristate boxes for all other groups.

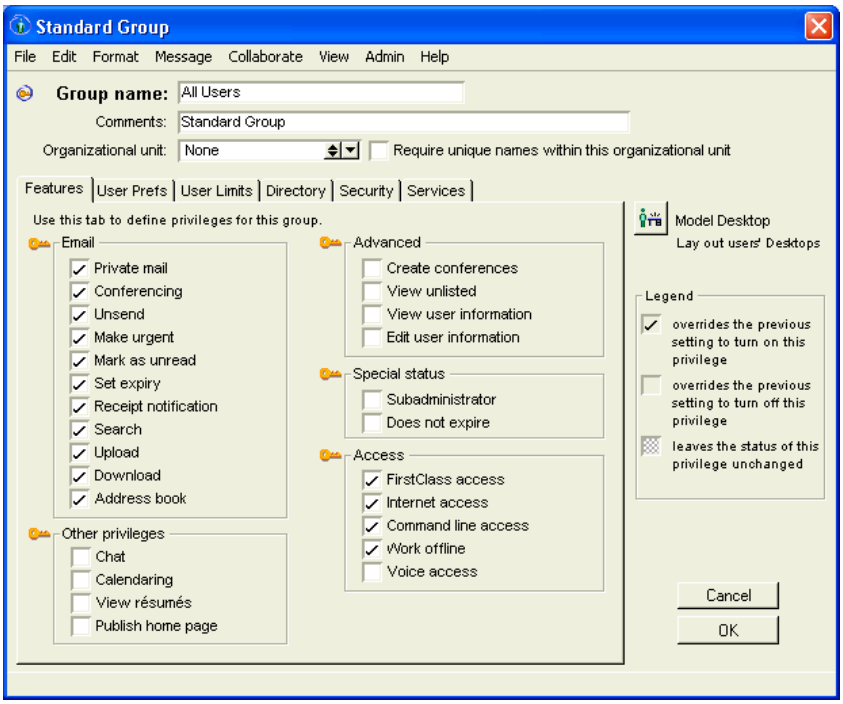
Open the All Users Group Privileges form by double-clicking All Users in the Groups folder.

Set all overall defaults you want to use for your system, based on your school's needs, policies and security. You might find it helpful to make a note of these settings for future reference.

Warning Never leave checkboxes on the All Users, All Conferences, or All Calendars forms in the unchanged (cross hatched) state. They must all be set to on (checked) or off (cleared).

We will set the following defaults for Avalon Academy:

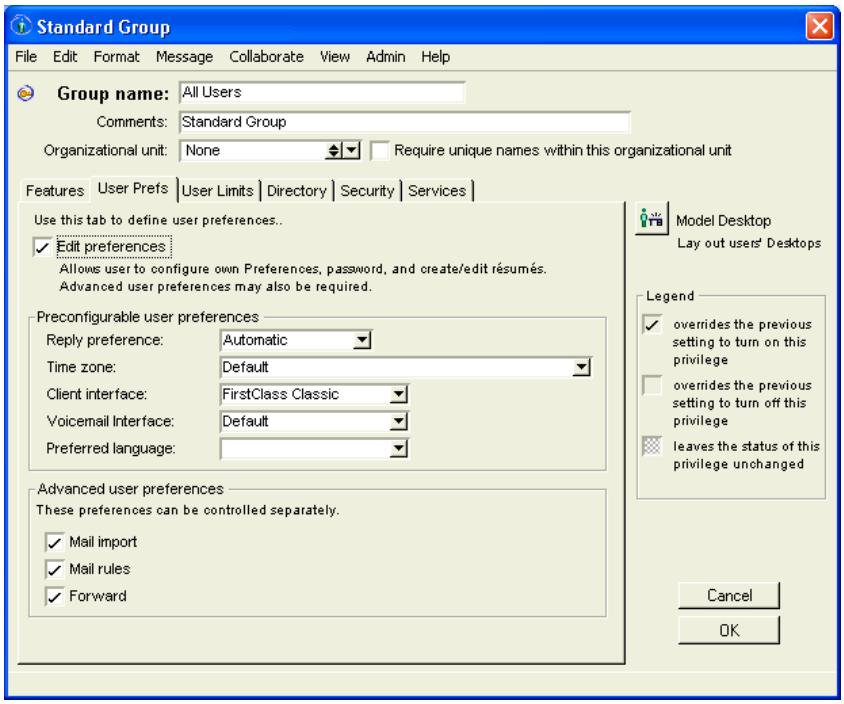
Features tab



On the Features tab, we will make some decisions about what features all users can access and what we will allow users to do on our FirstClass system. We will also define what methods of access we will allow our users.

We will turn on all features in the Email section. We will override some of these settings for specific user groups later. In the Other privileges, Advanced, and Special status sections, we will make sure all features are turned off. We will give these features to specific user groups later, but if we forget, it's safer to have them turned off than on. In the Access section, we will turn on all access methods except for Voice access, since this is only used with FirstClass Unified Communications (for information, see *FirstClass Voice Services Administrator's Guide*).

User Prefs tab



On the User Prefs tab, we will set system-wide user preferences.

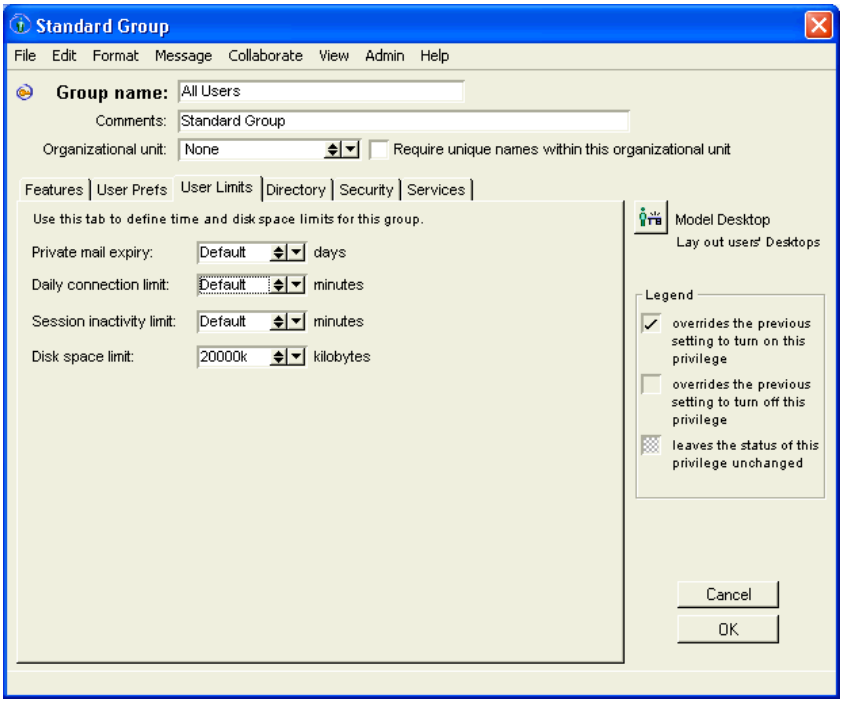
Selecting Edit preferences gives all users the ability to change their personal preferences. You might want to disable this privilege for guest accounts to ensure the accounts are always left in the same state.

We will choose the following values:

Reply preference	Automatic
Time zone	Default since our users are in the same time zone as our server.
Client interface	FirstClass classic. Our users will quickly become familiar with this easy-to-use interface.
Voicemail interface	Default. This field is described in detail in *FirstClass Voice Services Administrator's Guide* and is used only for FirstClass Unified Communications customers.

Preferred language	None. Once again, this is a FirstClass Unified Communications feature.
Mail import	We will select this to allow users to set up POP3 mail import.
Mail rules	We will select this to allow users to define personal mail rules on the personal preferences form.
Forward	We will select this to allow users to forward personal mail as well as messages in conferences.

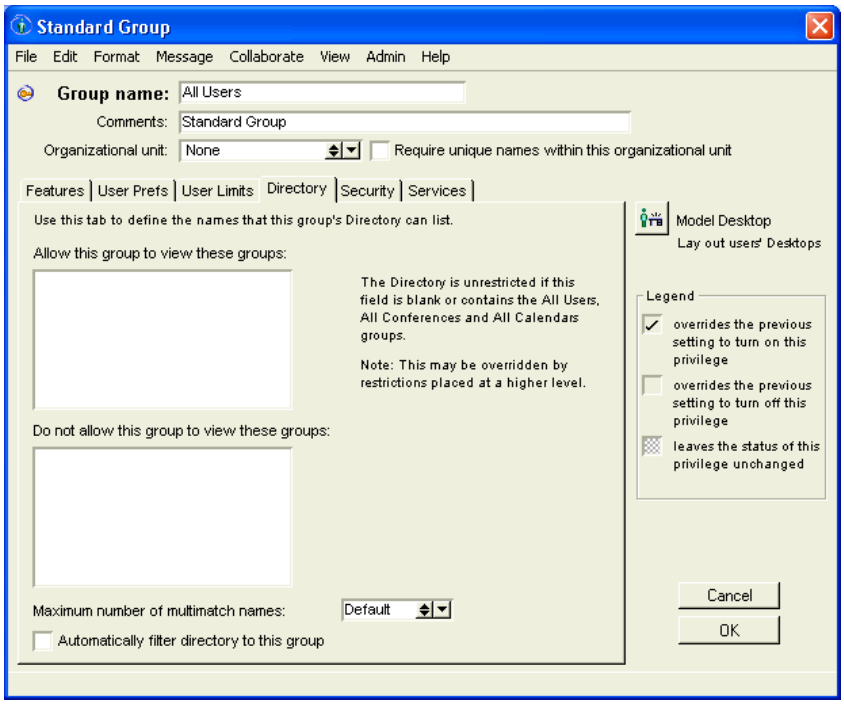
User Limits tab



On the User Limits tab we will set the system defaults for Private mail expiry, Daily connection limit, Session inactivity limit and Disk space limit. All of these limits, except for Disk space limit were already set on the System Profile. The value for Default on the All Users Group Privileges form is the value that you set on the System Profile. Any value added to a Group Privileges form will override the System Profile for all users in that group.

We will allow users 20,000 kb of disk space.

Directory tab

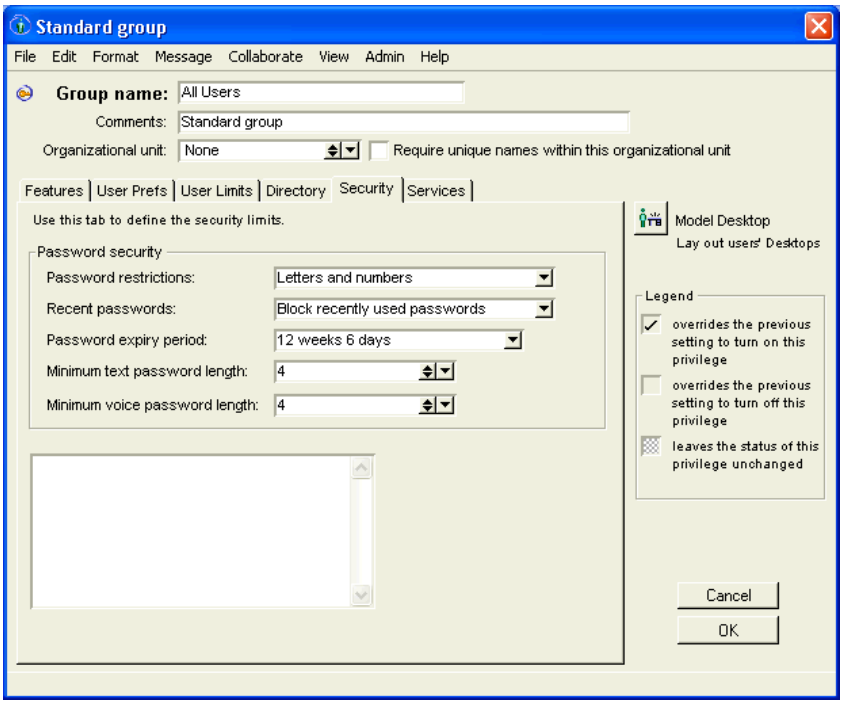


On the Directory tab we can set system-wide Directory filtering. By default the Directory is unrestricted for all standard groups with the following exception:

- the Unauthenticated Users group can see only members of Web Names, Web Conferences, and Web Calendars groups.

This configuration provides us with a level of security we're comfortable with for now. We won't restrict the Directory any more at this level, but will set Directory filtering for selected groups of users later. Directory filtering will be described in detail in Chapter 9, "Understanding Directory filtering".

Security tab

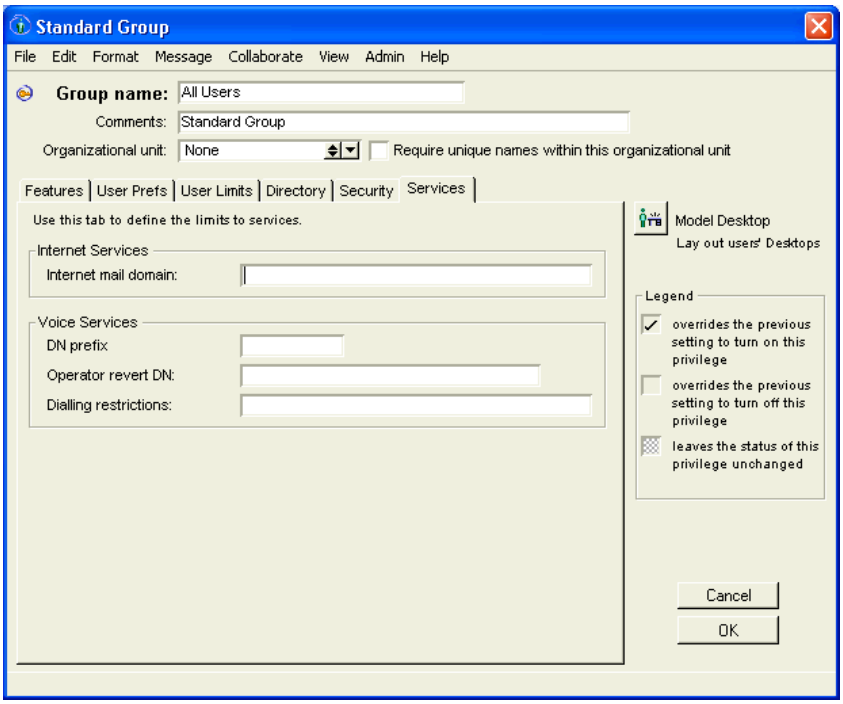


On the Security tab, we will set some important rules about password use and download limitations.

Password restrictions	We have chosen Letters and numbers to force users to have more complex passwords, so their accounts aren't easily accessed by others.
Recent passwords	We block users from reusing any of their last five (5) passwords used. This gives us added security.
Password expiry period	Enter the number of days between password expiration, or choose Never. We entered 90 days (12 weeks 6 days). This is long enough that users are not constantly having to change their password, but short enough to ensure a secure system.

Minimum text password length	8. This number is high enough to force users to choose complex passwords, but not too long that they will forget.
Minimum voice password length	4. This is a reasonable minimum length for numeric passwords. You only need to put a value here if you have FirstClass Unified Communications.
Download limitations	This field is primarily used to stop viruses from being sent through your FirstClass system. If there is a known virus, enter the exact attachment name in this space. FirstClass will not allow uploading or downloading of this specific attachment name. This field can also be used to disallow downloading files of a specific type. Enter the file extension preceeded by a wild card. FirstClass will not allow uploading or downloading of this file type. You can set attachment limitations for the All Users group, or any groups you create. Do not set attachment limitations on any other Standard user group.

Services tab



The fields on this tab pertain specifically to Internet Services and Voice Services. They are discussed in our online help.

Optional method for small systems

If you have an extremely small system and want to build each user group's (or individual user's) privileges individually, clear every checkbox on every tab. All corresponding tristate boxes on any group form in the unchanged state (cross hatched) will default to the Off setting you set on the All Users form. While this is a safer method than selecting all checkboxes and then having to clear unwanted checkboxes on the group forms, neither of these methods is recommended. This practice will result in a FirstClass system that is very difficult to monitor and administer as every user will have custom settings. This method may lead to problems as your system grows.

Understanding Model Desktops

As administrator, you can use the Model Desktop feature to customize the appearance of users' Desktops. For each user group, you can design a Model Desktop that determines:

- the icons that appear on the Desktops of members of the group
- the properties and location of each icon
- the Desktop size, sort order, view, and split bar location for conferences and other windows.

Each user group has a Model Desktop. Icons for all the conferences and folders on the Model Desktop appear on the Desktops of all members of the user group in the same location as they appear on the Model Desktop.

When you add a new user to a user group, you automatically place all the objects found on the group Model Desktop onto the user's Desktop. When you delete a user from a user group, you delete the objects found on the group Model Desktop from the user's Desktop. Similarly, when you add an object to the group Model Desktop, you add it to the Desktops of all members of the group. When you delete an object from the group Model Desktop, you delete it from the Desktops of all group members.

By creating Model Desktops for your user groups, you can reduce the effort involved in maintaining a complex system. Instead of customizing each user's individual Desktop, you customize the look of a group of users' Desktops.

Note When a user is added as a member of several groups, the icons from all of the groups' Model Desktops appear on the user's Desktop. Use careful

planning to create Model Desktops that can be easily combined without overlapping icons.

In this chapter, we'll look at the All Users Model Desktop and the Model Desktops of user groups in the default post office.

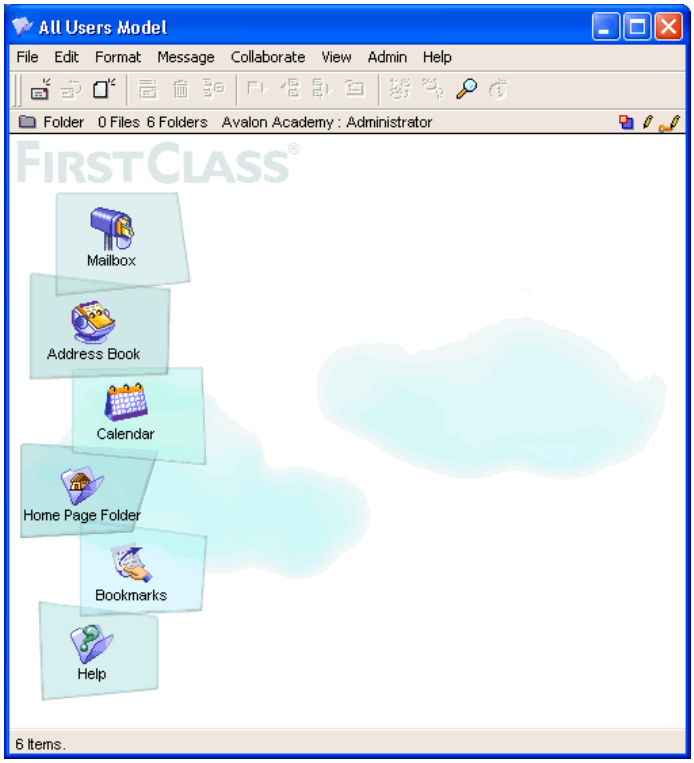
The All Users Model Desktop

The Model Desktop for the All Users group determines the following characteristics:

- the position and dimensions of all users' Desktops
- the position of the Mailbox folder on all users' Desktops
- the icon used for the Mailbox on all users' Desktops

Double-click the All Users group and click Model Desktop.

All Users Model Desktop



Note that the standard objects are placed along the left of the Desktop. This will be true for all users, so when we add items to other groups' Model Desktops, we will not place them along the left side. There are six standard objects on the All Users Model Desktop:

- Mailbox
- Address Book
- Calendar
- Home Page Folder
- Bookmarks
- Help

Mailbox

Even though we have the option of turning off the email privilege for the members of a user group, the Mailbox icon will still appear on their Desktops since it exists on the All Users Desktop. Even if we deleted the Mailbox from the Model Desktop it would still appear on users' Desktops since it is just a placeholder. Members of the user group will be able to receive and read email, they just won't be able to send or reply to private email. When they send mail to conferences, a copy of the sent message will be in the user's Mailbox.

Address Book

Whether or not users have the Address Book feature enabled, all users have a personal Address Book on their Desktops. If the feature is enabled, a user can address mail to anyone in his Address Book the same way he does for anyone listed in the Directory. If this feature is not enabled, the Address Book can still be used as a storage container for personal contacts. For information about addressing messages, see our online help.

Calendar

This is the user's personal calendar for scheduling tasks and events. If this feature is not enabled, the user cannot open this object on his Desktop. If you do not enable this feature for all users, you can delete the calendar from the All Users Model Desktop and add it to other groups' Model Desktops so only selected groups of users will have a calendar on their Desktops.

Simply create a protected folder called Calendar and give it the appropriate icon.

Home Page Folder

Users can create personal home pages in this folder to be rendered directly to the web.

If this feature is not enabled, either on the Group Privileges form or on the User Information form, users can still create internal home pages, which can only be seen by those people who can see the user's name in the Directory when using the client.

Bookmarks

All users have access to this feature. For information about creating and using bookmarks, see our online help.

Help

This folder contains help files explaining many of the basic tasks FirstClass users will want to perform. You can add additional help material if you wish by adding documents to the Help folder on the administrator's Desktop. Users can also access the Help contents by choosing Help > Help contents, or by pressing F1.

Configuration Groups' Model Desktops

Only two of the groups classed as Configuration Groups have customized Model Desktops. These are:

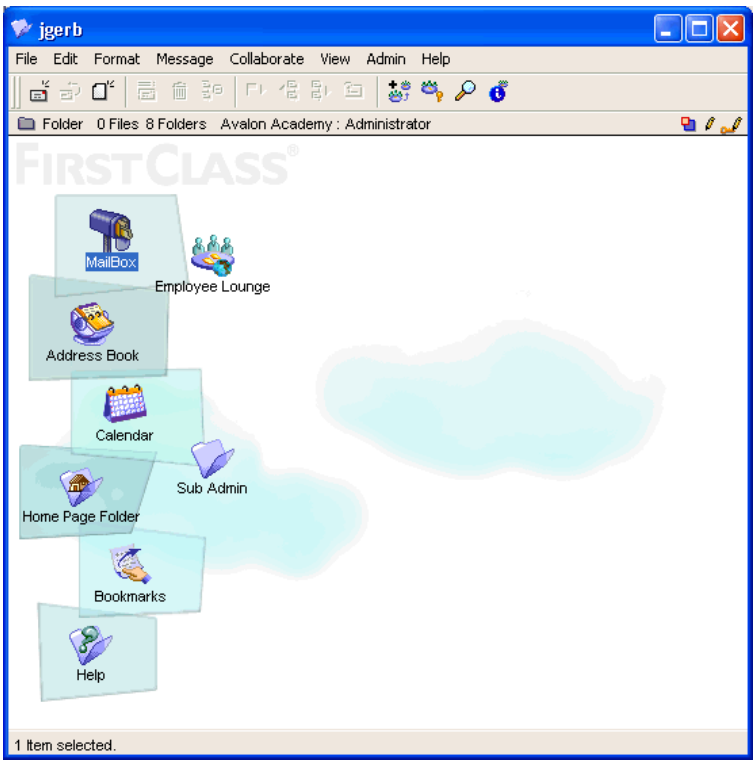
- Sub Admin
- Webmaster.

Sub Admin

The Sub Admin Model Desktop contains a Sub Admin folder containing all the objects a subadministrator requires from the administrator's Desktop for his role as subadministrator. For information about subadministrators, see "Subadministrators" on page 11. This folder is on the bottom row of the second column. Remember that there is an icon in this space when combining Model Desktops for subadministrators.

Jack Gerb is the subadministrator for Avalon Academy. By adding Employee and Sub Admin to the list of groups to which he belongs, he will see the following Desktop when he logs in:

Subadministrator's Model Desktop



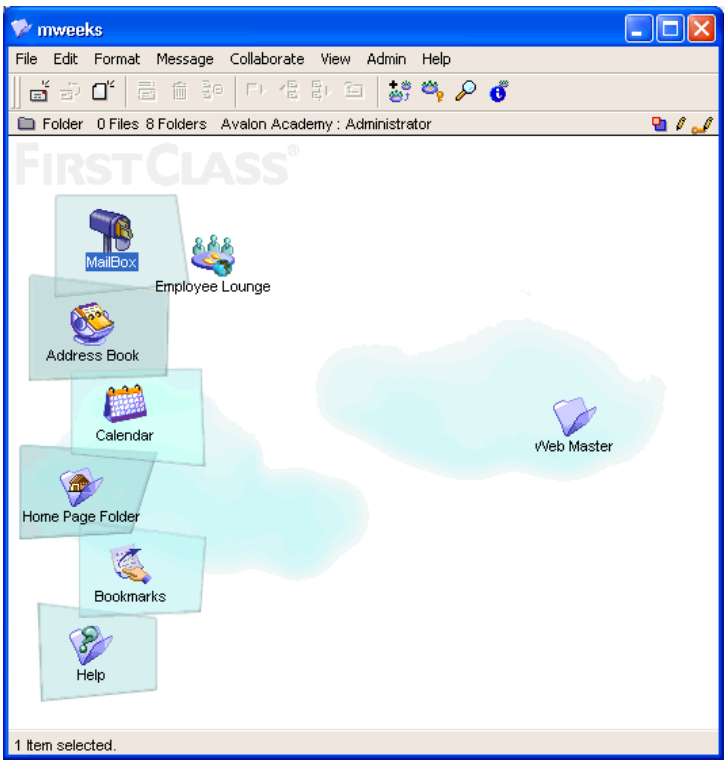
The Sub Admin folder contains all the Desktop objects from the administrator's Desktop that he needs to perform his duties as subadministrator. The Employee Lounge conference is on all employees Model Desktops and will be discussed later in "Department Groups' Model Desktops" on page 103.

Webmaster

The Webmaster Model Desktop contains a Webmaster folder containing all the objects required to administer Internet Services. For information about Internet Services, see *FirstClass Internet Services Administrator's Guide*. This folder is in the bottom row of the second column. Remember that there is an icon in this space when combining Model Desktops for Internet Services administrators.

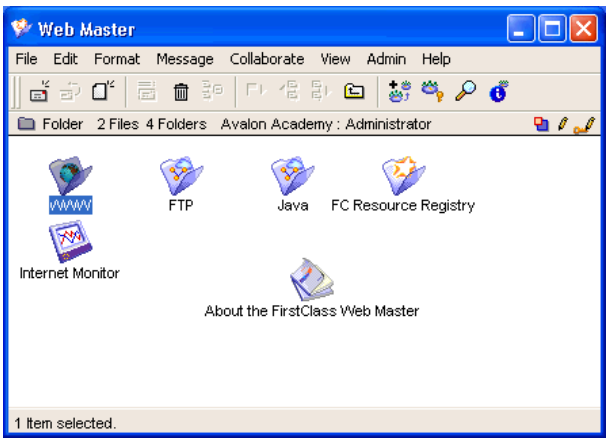
Michelle Weeks is the webmaster for Avalon Academy. By adding Employee and Webmaster to the list of groups to which she belongs, she will see the following Desktop when she logs in:

Webmaster Model Desktop



The Webmaster folder contains all the Desktop objects from the administrator's Desktop that she needs to perform her duties as webmaster.

Web Master folder



The Employee Lounge conference is on all employees Model Desktops and will be discussed later in “Department Groups’ Model Desktops” on page 103.

Department Groups’ Model Desktops

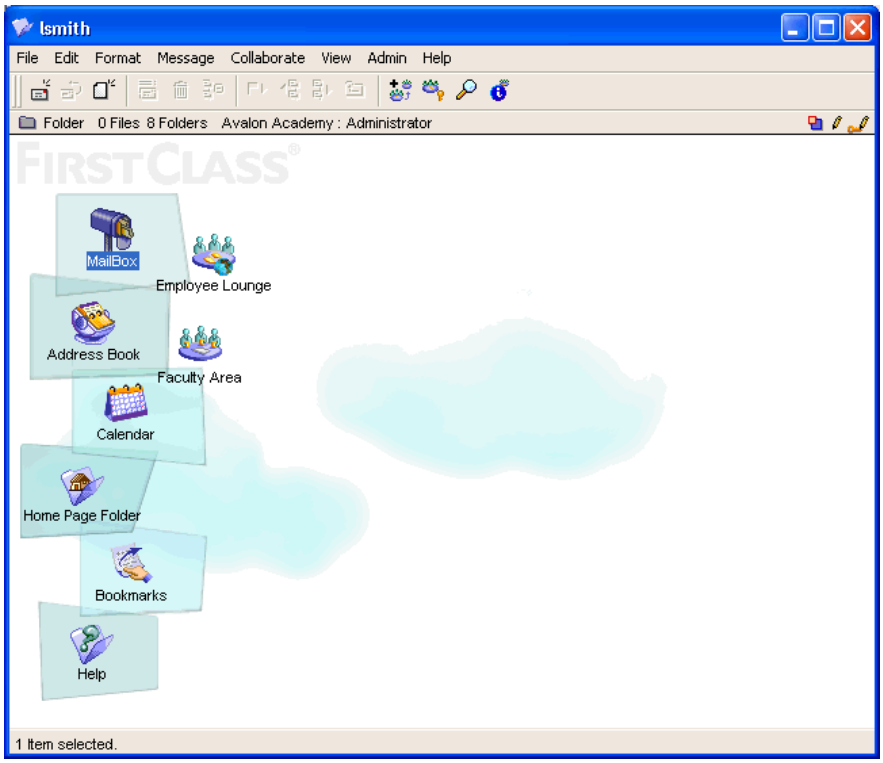
8

Each Department Group contains one or more objects specific to the group’s users. All members of the Employees group have a link to the Employee Lounge, an employee collaboration area, in the top row of the second column of their Desktop. When adding objects to or combining employees Model Desktops, remember that there is an icon in this space.

All other Department groups have one or two additional icons on their Model Desktops. These icons are placed in the second and/or third row(s) of the second column. When adding objects to or combining Model Desktops, remember there are icons in these spaces.

Lisa Smith is a member of Avalon Academy’s faculty. By adding Employee and Faculty to the list of user groups to which she belongs, she will see the following Desktop when she logs in:

Faculty employee Model Desktop



The Faculty Area is the main collaboration area for all faculty members. It contains a faculty calendar and a message archive so the main conference can always be kept current, but no old messages will be lost.

Adding objects to Model Desktops

You can add a link to any FirstClass object (calendar, conference, folder) to any group's Model Desktop. In Chapter 12, "Adding conferences and conference groups" we will create some custom conferences and then add the conferences to our groups' Model Desktops.

Moving objects on Model Desktops

The position of any object on a Model Desktops can be changed. This can be done in any of the following ways:

- dragging and dropping the object to a new position on the Desktop

  This can be used if you want the Model Desktop to be in a creative design. For example, wrapping around a background image, or representing your organization's name, initials, or emblem.

- moving the object to a specific location on the Model Desktop

  To do this:

  a) Select the item to be moved and choose Edit > Properties (Windows)/Get Info (Mac OS).

  b) Change the horizontal and/or vertical position values to the exact spot where you want the icon placed on the Model Desktop.

  c) Click OK.

- moving the object one pixel at a time horizontally or vertically.

  To do this, hold down Ctrl + Shift (Windows)/Option (Mac OS) and the appropriate arrow key.

Understanding Directory filtering

Directory filtering allows the administrator to control what people can see in your FirstClass Directory. When no Directory filtering is used, anyone we add to any group can see all the entries in the Directory. If users can't see things, it makes it a lot harder for them to post to them. Filters let us make sure users only see names they should be able to post to, or at least be aware of.

Using the FirstClass Directory

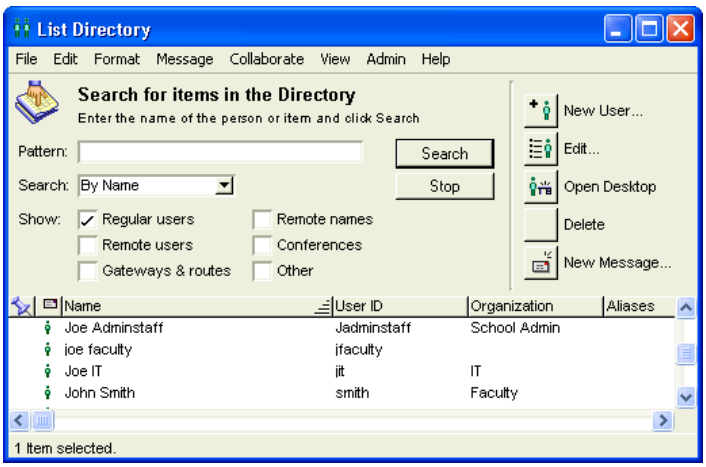
The Directory is a database containing the names of all global objects defined on your FirstClass system (users, conferences, public mail lists, groups, calendars, remote names). The FirstClass server consults the Directory when a user performs the following tasks:

- logging in
- addressing mail
- sending mail.

Users can consult the Directory to find the name of a user or conference to which they want to address mail. You can display the Directory by choosing Collaborate > Directory.

As the administrator, you have a more powerful search mechanism, the Admin > List Directory command. This allows you to filter the Directory listing, selecting the types of objects to be displayed, and their sort order. The List Directory looks like this:

List Directory



You can search by name, User ID, group, Internet alias, or Client ID, and filter your search by type of user, conference, gateway, or other object type.

Once you have executed your search, you can manipulate user data directly from the List Directory. Select the user you want to change, and then select:

- Edit

  to edit this user's User Information form

- Open Desktop

  to open this user's Desktop

- Delete

  to permanently remove this user from your system

- New Message

  to address mail to this user.

Select New User to add a new user to your FirstClass system.

Privacy in your FirstClass system

By default the Directory is unrestricted for all standard groups with the following exception:

- the Unauthenticated Users group can see only members of Web Names, Web Conferences, and Web Calendars groups.

You can control how much of your system can be viewed in the Directory in several ways:

- You can make a user account, conference, or public mail list unlisted.

  Only users with the View Unlisted privilege can see unlisted users in the Directory.

  Making users unlisted is discussed in Chapter 14, “Adding users”, making conferences unlisted is discussed in Chapter 12, “Adding conferences and conference groups”, and making public mail lists unlisted is discussed in Chapter 15, “Public mail lists and chats”.

- You can allow members of user groups to view only selected user groups, conference groups, or conferences in the Directory using the Group Privileges form.

- You can allow specific individual users to view selected user user groups, conference groups, or conferences in the Directory using the User Information form.

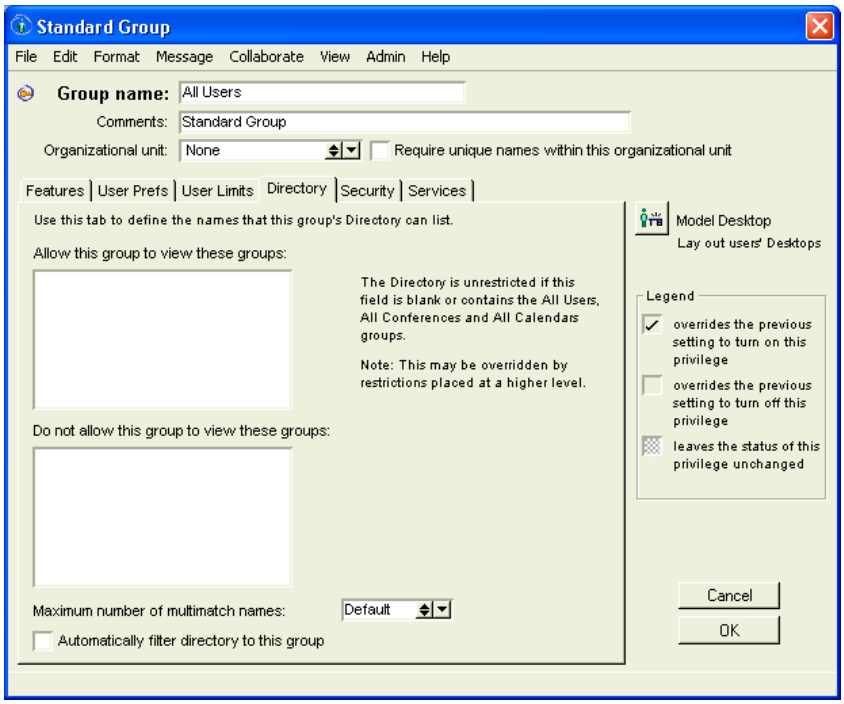
Creating Directory filters

You can filter the Directory at the user group level, or at the user level. We recommend setting Directory filters for user groups instead of individual users since this gives you more uniformity in your system and makes it easier to administer. Set Directory filters at the user level for special privileges only.

To set Directory filters at the group level, use the Directory tab on the Group Privileges form.

To set Directory filters at the user level, use the Directory tab on the User Information form.

Group Privileges – Directory tab



Allow this group to view these groups

Use this to include only certain user groups and/or conference groups in the group's view of the Directory.

Any user group, conference group, or calendar group listed here will be seen in the Directory by any user who is a member of this group. All other user groups, conference groups, and calendar groups will not be listed in the Directory for all members of this user group.

Maximum number of multimatch names	Default is unrestricted. Use this to add security to your system. If this is set to 0, then users (and unauthorized guests or autoregistered users) cannot guess partial names and access the Directory. Users will have to know the exact name of the person to whom they want to address mail.

Creating your FirstClass environment

Using batch administration

Batch administration is a process for transmitting scripted commands to the FirstClass server. You can use batch administration to add large groups of users, conferences, and groups quickly, or to restore select portions of your post office from backup.

An organization with a large user base will find that batch administration can streamline the administration of its system. If your user base changes constantly, invest some time in exploring the capability of batch administration. If you are beginning a new system, batch administration can quickly create all user groups and users.

10

Your Human Resources and/or student database is an important part of managing a site through batch administration scripts. Since user IDs are needed to add, delete, or modify user accounts, unique user IDs must be generated from your database. Once you have produced a delimited flat file from your database, you can use any spreadsheet program to manipulate the data into the batch administration commands. With most spreadsheet programs, the data can be copied from the worksheet and pasted into a FirstClass message. The columns will be translated to tabs in FirstClass.

In this chapter, we will look at the following aspects of batch administration:

- how FirstClass uses batch administration
- setting up batch administration
- tips and reminders.

For batch administration commands, descriptions and syntax, see our online help.

How FirstClass uses batch administration

Batch administration provides a batch interface to FirstClass administration; that is, an interface in which commands are executed from a file, rather than from manual input.

The Directory synchronization feature uses batch administration to replicate user information among all the servers in a FirstClass network. For information about Directory synchronization, see Chapter 16, “Adding gateways”.

Setting up batch administration

To use batch administration, simply send a message containing your commands to “Batch Admin”. The batch administration task executes the commands in the message. By default, only the administrator can send batch administration requests. Other users can be given permission to execute batch administration commands using a password. To allow other users to execute batch administration commands, see our online help.

warning If you give others this permission, change the password frequently to prevent unauthorized access to the Directory. Do not use the administrator account password.

You can also create a text file with the extensions .ba (for example, myfile.ba) and place the file in the FCPO\Server\Batch folder (Windows), or in the FirstClass Post Office\Server\Batch folder (Mac OS). The next time the server is started, the batch administration script will execute. After finishing, the text file is deleted from the folder.

Tips and reminders

When using batch administration, keep the following tips in mind:

- Many batch administration commands refer to network users and telecom users. These terms are used for compatibility with older batch scripts. Network users are Regular users, and

telecom users are Remote users. For information on classes of users, see Chapter 3, “FirstClass server concepts”.

- Many batch administration commands refer to Remote users and remote names. Be sure you understand the difference.
  - A remote user is classified as such in the Class field on the User Information form.
  - A remote name is the Directory entry for a user on another server connected to your server by a gateway.
- Batch administration commands are not case-sensitive, except for the parameters for the LIST and NEW commands. These must be typed in lowercase.
- Parameters that contain spaces must be enclosed in quotes (either single or double).
- A single command line cannot exceed 500 characters.
- You can omit trailing fields. For example, when you are adding a regular user, you can omit the <dept> to <PGn> fields. However, the batch administration task recognizes fields by their relative position. For example, in the ADD NETWORK command, <class> is followed by <userID>, which is followed by <first>, and so on. If you want to use an optional field, like <phone1>, you must include all preceding optional fields, although you can leave them empty by typing two double quotation marks ("").
- You can use some batch administration commands to produce text files readable in FirstClass. Depending on session memory limits, however, you might not be able to read the list in FirstClass if your system is too large. If the file is too large, you can save it as a text file and view it using a text editor.
- All time is stored in seconds. Each hour has 3,600 seconds, and each day has 86,400 seconds.

Creating and customizing user groups

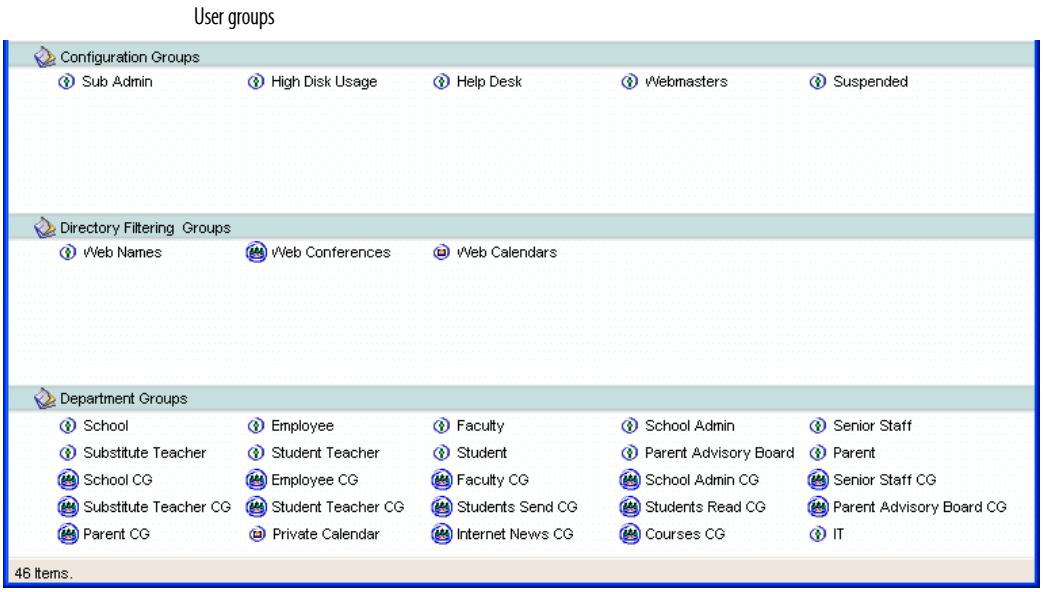
When you install FirstClass, there are five sets of groups already defined in your post office:

- Standard Groups
- Configuration Groups
- Directory Filtering Groups
- Department Groups
- Conference Groups.

These sets of groups already have groups created to help you get started in setting up your FirstClass environment. The Groups folder may look a little overwhelming at first glance, but is very easy to work in and customize once you are familiar with the structure of the Groups folder and how the individual user groups fit into this structure.

In this chapter, we will discuss the Configuration, Directory filtering and Department groups. We will also discuss how to create a unique group structure for your organization based on the decisions we made in “Thinking about your organization’s structure” on page 21. We discussed the standard user groups in Chapter 7, “Understanding groups, organizational units, and privileges”. Conference groups will be discussed in Chapter 12, “Adding conferences and conference groups”.

The section of the Groups folder we will be dealing with looks like this:



Configuration Groups

Configuration groups are simply groups that define the use some users make of your FirstClass system, but it does not define their roles within the organization. The pre-configured groups in this area are:

- Sub Admin
- High Disk Usage
- Help Desk
- Webmasters
- Suspended

Membership in these groups is not based on organizational identification. Group members may have additional configurations based on membership in one of these groups, but these privileges do not define the users' overall place in the organization. For example, you may have five members in your IT department (organizational), but only two of these users are also subadministrators (additional configuration). The organizational classification of these five users is IT, and the

extra duties of two of these users include subadministrator duties, which require additional configurations. Therefore, they are added to the Sub Admin configuration group.

You can delete or rename any group in this area, however, we suggest you do not delete the Sub Admin or Webmasters groups since they have been configured to contain all the tools and security required to perform these roles. If you do not use a subadministrator to help with FirstClass administration, or you do not use FirstClass Internet Services to connect to the Internet, leave these groups intact but do not add users to them.

Directory Filtering Groups

You can delete or change the names of any group in this area, but we suggest you don't. These groups have been created to help you build a secure environment, protected from outside users trying to access your Directory from the Internet.

Department Groups

Department groups are used to organize people on your system into their functional areas. You may want to designate an OU level for these groups (see "Organizational units" on page 76 for information).

You can delete or rename any group in this area. You can have up to 300 groups (unlimited for MP sites) in the Groups folder.

Adding and customizing user groups

As stated earlier, you can choose to delete the existing Department group structure, and create a department group structure that more closely fits your organization.

To illustrate how to plan and create a group structure, we're going to customize some department groups to align the group structure more closely with ourAvalon Academy school structure.

Some of the groups Avalon Academy is divided into are faculty, school administrators, and students. We also need one more group, IT, for our technical support group.

Adding user groups

To create new groups to reflect your organization's structure, do the following:

1. Open the Groups folder on the administrator's Desktop.
2. Choose Admin > Add > User group.

Warning All new groups must be created and reside in the Groups folder on the administrator's Desktop. If you create the group anywhere else, it will not function properly.

Adding group privileges

Now we have to think about what we want users in these various groups to do and how those functions are reflected in FirstClass features.

IT group privileges

IT is the easiest group to deal with, so we'll start there. Since our IT department is responsible for maintaining our server and administering the system, we want them to have access to almost everything.

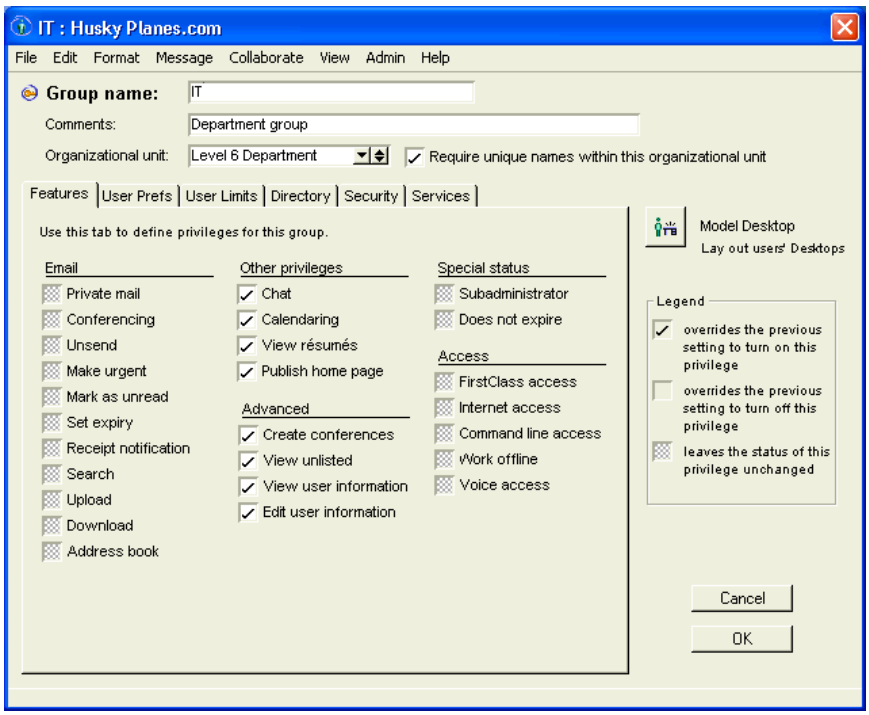
First, because the IT group is an organizational division in Avalon Academy, we will give this group an organizational unit designation of Department. We will also select Allow unique names within this organizational unit. This will make it easier if we have another employee with the same name in another department (another organizational unit).

On the Features tab for the All Users group we enabled all the features in the Email and Access sections. For the IT group, we will enable all the privileges in the Other privileges and Advanced sections so IT members have access to almost all features.

However, we will not enable the Special status features (Subadministrator and Does not expire). Since we already have a user group configured for subadministrators (Sub Admin), we will add subadministrators to the Sub Admin group instead of

giving that feature to all IT staff. See “Creating subadministrator accounts” on page 12.

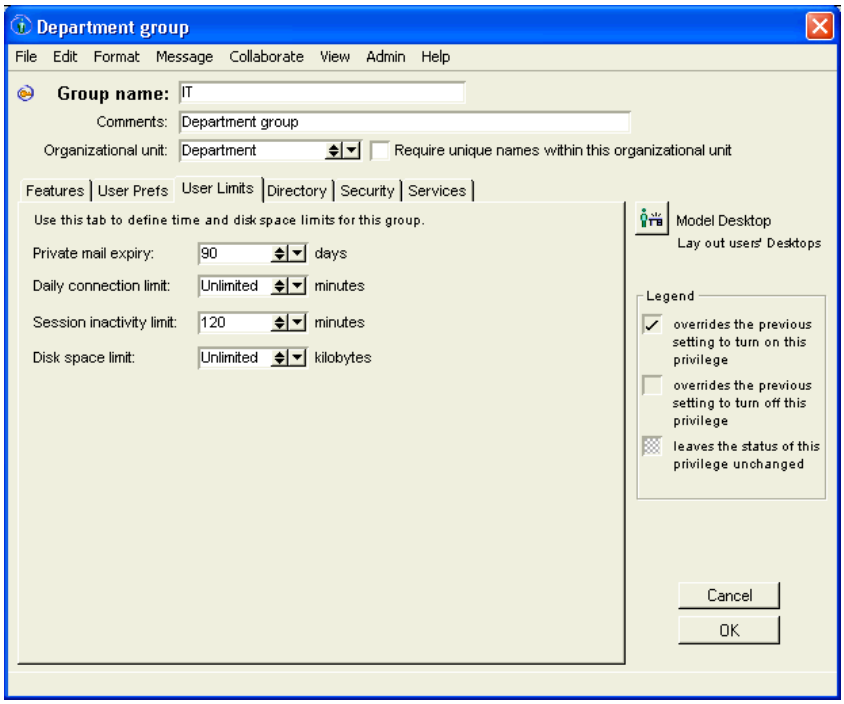
IT - Features



We do not have to alter anything on the User Prefs tab.

We should set user limits high (unlimited where available). We don’t want our IT staff being automatically logged off or running out of disk space.

IT - User Limits



Since IT staff are Regular users and they should be able to see everything on the system, we won't set up any Directory filtering for these groups.

We don't need to change anything on the Security or Services tabs since we set these system-wide values on the All Users Group Privileges form.

Students group privileges

We want students to sign on to our system and participate in various conferences set up for their use. These conferences will allow them to talk to teachers about course material, send and retrieve assignments, and engage in discussion with other students about the subjects they are studying. While we want students to have easy access to information, we don't want them to have access to personnel information or details about other students.

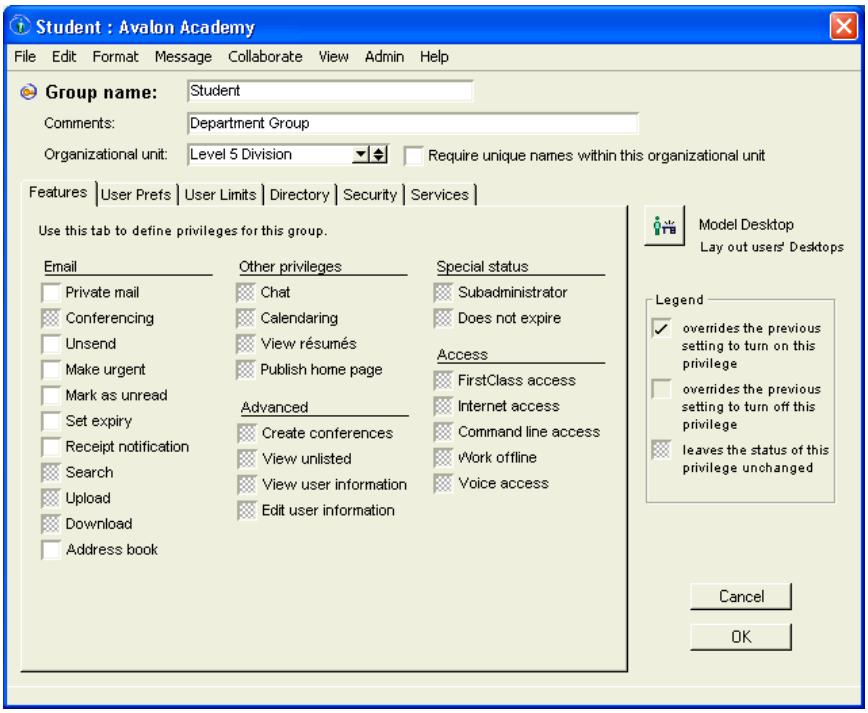
The students group is an organizational division in Avalon Academy, so we will give this group an organizational unit designation of Department. We will also select Allow unique names within this organizational unit. This will make it easier if we have a student and an employee with the same name.

Since we only want students to use the conferences we will set up for them, in the Email section of the Features tab, we'll turn off all features except Conferencing, Search, Upload and Download. This will allow students to search these conferences for information and upload or download attachments. We will leave the other sections of the Features tab unchanged from the values we set for the All Users group.

If you want to give users the ability to send internal email to other users, but do not want them to send or receive Internet mail do the following:

1. Select the Private Mail feature for the user group on the Features tab of the Group Privileges form.
2. Open the Internet Gateway form.
3. Click Permissions.
4. Enter the user group name at Who, and choose Disallowed at Access.

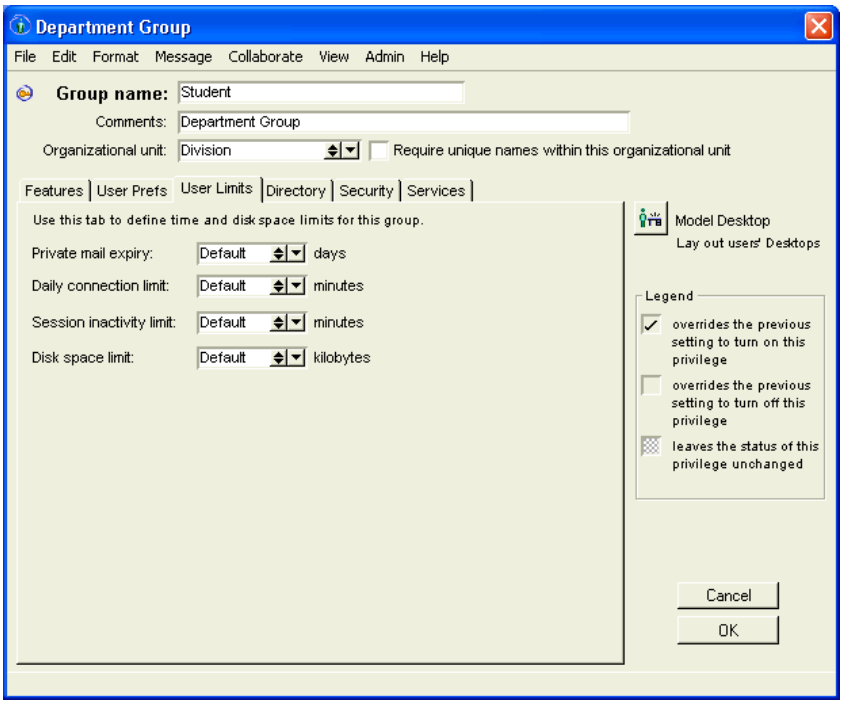
Students - Features



On the User Prefs tab of the All Users Group Privileges form, we gave users access to all features. Since students do not have private mail, some of these features will no longer apply. We will leave this tab unchanged.

Since we have fewer network sessions than students, we want to limit the time any each student is logged on so everyone gets a chance. On the User Limits tab, we'll set the Daily connection limit to 60 minutes. We'll set the Session inactivity limit to 5 minutes so if a student mistakenly walks away from the computer leaving the connection active, she will be automatically logged off and won't use up the entire daily connection limit. Since students don't have private mail, we'll leave Private mail expiry unchanged. Finally, we'll put the Disk space limit at 10 mb, allowing students to upload significantly large files if necessary.

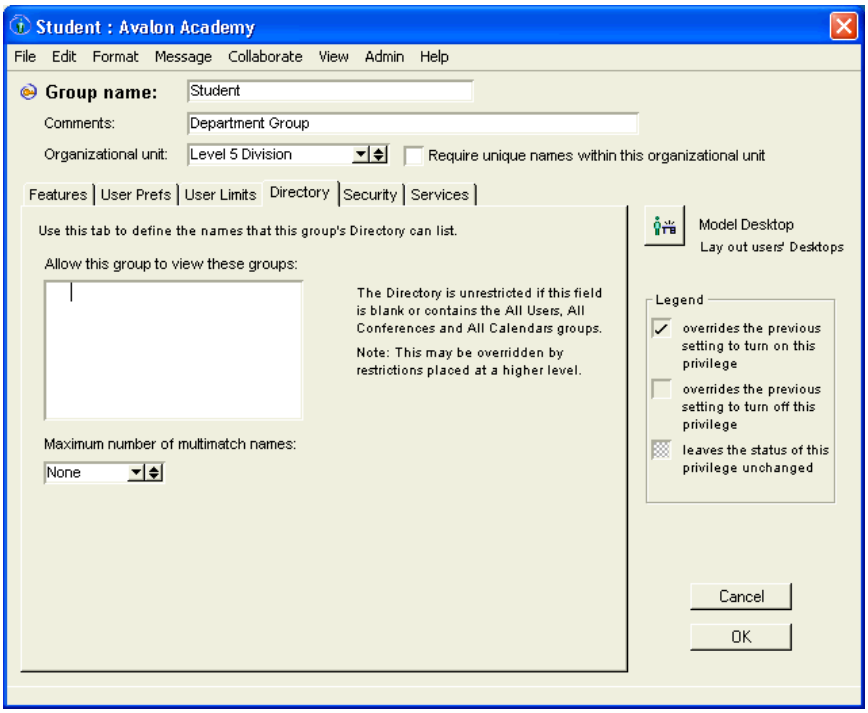
Students - User Limits



While we want students to have easy access to information, we don't want them to have access to personnel information or details about other users.

On the Directory tab, we'll set Maximum number of multimatch names to 0. This will make it impossible for students to guess the names of employees or other students and search for them through the Directory. For the moment, we'll leave Allow this group to view these groups blank, but we will be coming back to it once we've created a conference group. We'll create a group that will contain all student conferences, then enter that group name in this field. That will limit students' view of the Directory to only those conferences. Leave Do not allow this group to view these groups blank.

Students - Directory



We don't need to change anything on the Security or Services tabs, since we set those system-wide values on the All Users Group Privileges form.

Faculty group privileges

Faculty need to communicate with each other and share information within departments. They need more access privileges than students, but fewer than users in the IT group.

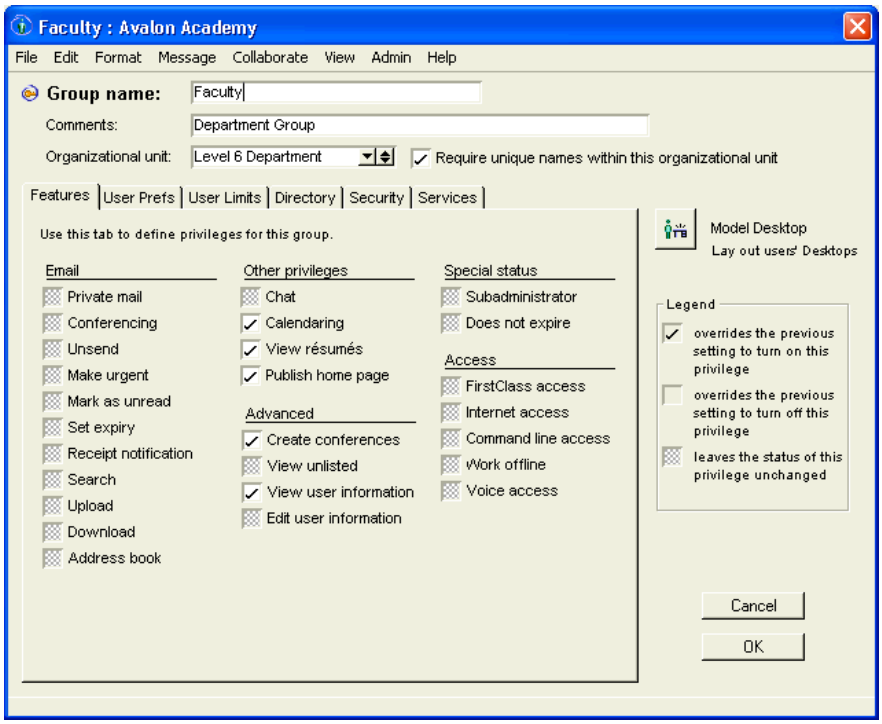
Like the students group, the faculty group is an organizational division in Avalon Academy, so we will give this group an organizational unit designation of Department. We will also select Allow unique names within this organizational unit. This will make it easier if we have a faculty member and another student or employee with the same name.

In the Email, Special status, and Access sections of the Features tab, we will leave everything unchanged since we set these

privileges at the All Users level. Then we'll turn on the following features:

- Other privileges: Calendaring, View Resumes, Publish home page
- Advanced: Create conferences, View user information.

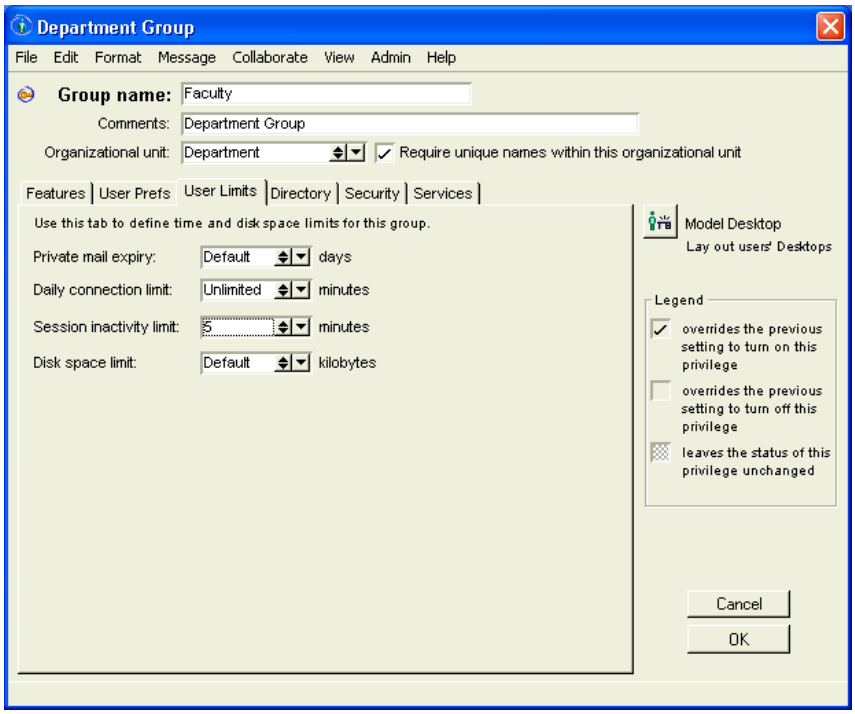
Faculty - Features



We do not have to alter anything on the User Prefs tab.

On the User Limits tab, we'll use the defaults we set on the System Profile and the All Users Group Privileges form.

Faculty - User Limits



On the Directory tab, we'll set Maximum number of multimatch names to Unlimited, so they can easily address mail. We won't place any restrictions on their view of the Directory.

School Admin group privileges

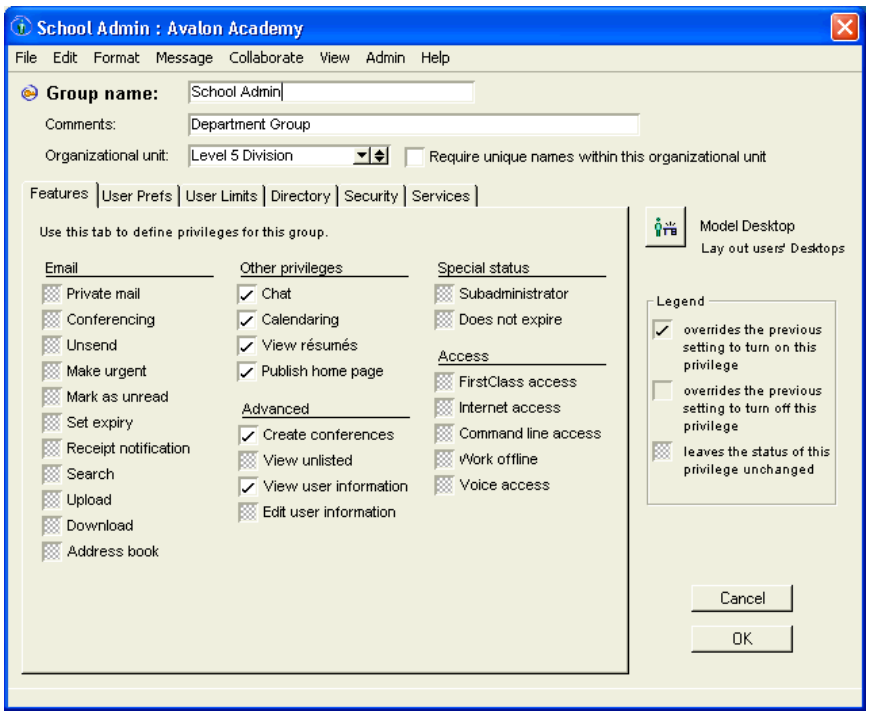
Administrators, like faculty, need to communicate and to have access to information. Since administrators deal with sensitive information, they should have a way of keeping it confidential while making it available to those who need it.

Like the IT, Students and Faculty groups, School Admin is an organizational division in Avalon Academy, so we will give this group an organizational unit designation of Department. We will also select Allow unique names within this organizational unit. This will make it easier if we have another user with the same name in another department (organizational unit).

The School Admin group will have the same features selected on the Features tab as Faculty, except they will also have Chat. We'll

be using conferences and Model Desktops to add features to further distinguish the School Admin and Faculty groups.

School Admin - Features



Since school administrators should be able to see everything on the system, we won't set up any Directory filtering for this group.

Other approaches

Here are a couple of other ways to set up and configure the users on your system:

- We could have ignored user groups entirely and modified each user's User Information form individually.

  Note: This would take more time and any user changes would have to be made on an individual basis, instead of on an entire user group at once.

Your structure should be tailored to suit your school's needs.

Adding conferences and conference groups

A conference is an online forum for user discussion. You can also think of it as a shared Mailbox used as a repository for messages on a particular topic. Conferences have permissions associated with them to control access by individual users or groups of users. They have expiry periods to delete old messages automatically. Conferences can be shared with other FirstClass servers, and can offer access to Internet newsgroups through NNTP (for information, see *FirstClass Internet Services Administrator's Guide*).

Conferences are created in the General Conferences folder on the administrator's Desktop. This folder is invisible to every user except the administrator and subadministrators. As the administrator, you then make selected conferences within this folder visible to the appropriate users or groups by granting subscriptions, adding them to Model Desktops, or placing a link to a conference in a public place. Remember, when we refer to the administrator here, we're talking about the administrator account on your server, not about members of the School Administration user group.

If groups of users, or individual users, are given the Create conferences feature, they can also create personal conferences, which they can administer.

In this chapter we will:

- look at the structure and contents of the General Conferences folder
- learn about using conference groups

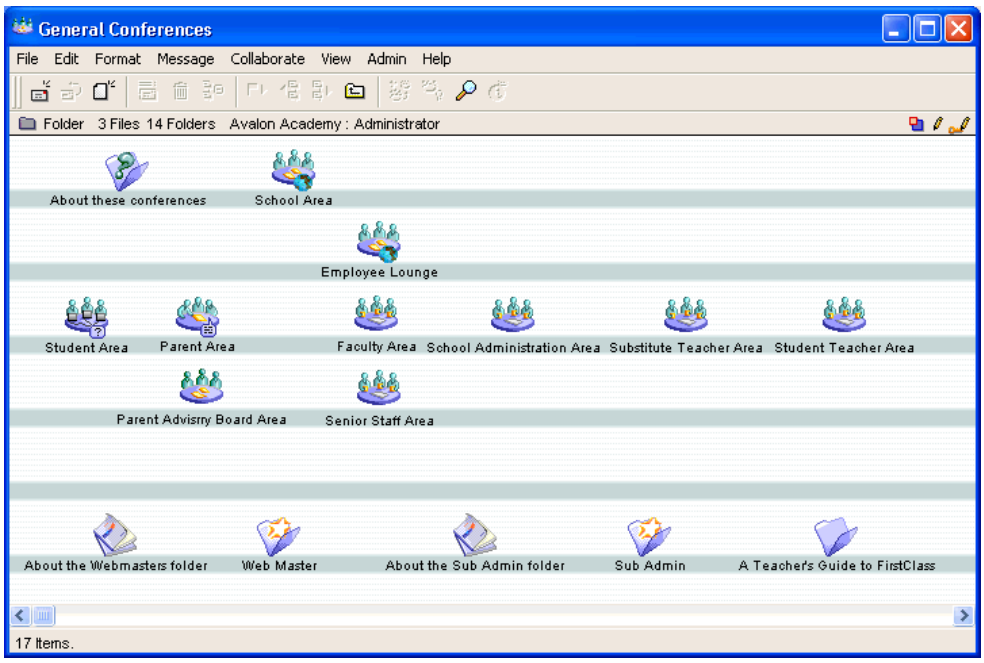
- create and customize new conferences for the user groups discussed in Chapter 11, “Creating and customizing user groups”
- learn how to control access to conferences through subscribing users to conferences and by adding conferences to Model Desktops
- learn how to use conference permissions.

The General conferences folder

When you install FirstClass, there are some conferences already created in the General conferences folder. These conferences can be used as they are, customized, or deleted to create a structure that best fits your organization.

The existing conferences match the Department groups of the default post office. There is an area (conference) for each Department group.

General Conferences



Inside each of these conferences is a message archive folder to move old messages to instead of simply deleting them, and a group calendar for all users to contribute to. You can add as many conferences to this folder as you wish, and you can add as many subconferences within each conference as you require. We will explain how to give users access to conferences in "Controlling access to conferences" on page 138.

Renaming conferences

Changing the name of the original icon for a conference deletes the old name from the Directory, and adds the new name. Changing the name of an alias does not affect the Directory entry. However, messages addressed to the conference must be addressed to the original conference name, not the alias.

Note: If this conference is being replicated over a gateway, the remote administrators should also change the name of their copy of the conference. For more information about conference replication, see "Setting up conference replication" on page 173, and our online help.

Using conference groups

Conference groups allow you to assign permissions to several conferences at once, the same way user groups allow you to assign privileges to several users at once. Conference groups, like user groups, are in the Groups folder on the administrator's Desktop. They are indicated by this icon:

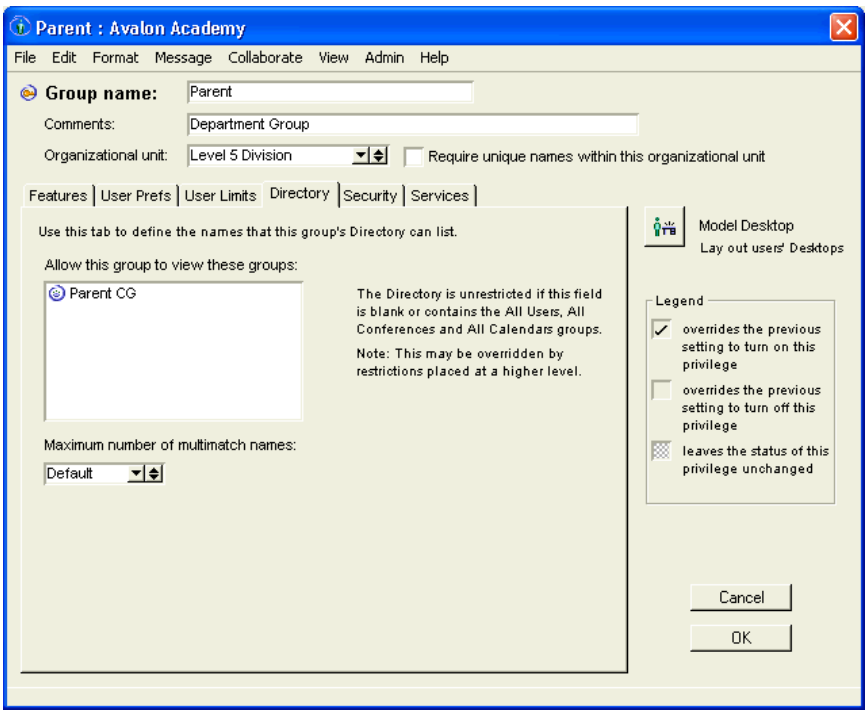
There is one standard conference group, All Conferences. Like the All Users user group, you should use it to set the standard permissions that will apply to most conferences, then use the conference groups included in the default post office, other conference groups you create, or individual conferences to change those permissions for selected groups or individuals.

In Chapter 9, "Understanding Directory filtering", we discussed filtering the Directory for groups of users or individual users. We

did this by listing the user groups that a particular user group, or individual user, should be able to see on the Directory tab of the Group Privileges form or the User Information form. You can also use Directory filtering to control access to conferences using conference groups. To filter the conferences available in a Directory listing, simply add the conference group as you would a user group on the Directory tab. Users will only be able to see conferences in that group.

In this example, we have added the Parent CG conference group to the Parent user group's Directory tab on the Group Privileges form:

Directory filtering to conference groups



The only thing parents will see when they list the Directory are conferences belonging to the Parent CG conference group.

The default post office has 11 conference groups. We're going to create two custom conference groups: Courses CG, which will

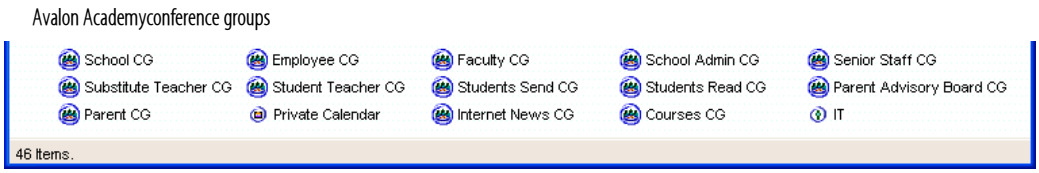
hold all the conferences for all school courses, and Internet News CG, which we're creating since we know some teachers will want to read newsgroups and they will need some slightly different settings. For more information about newsgroups, see *FirstClass Internet Services Administrator's Guide*.

To create a new conference group:

1. Choose Admin > Add > Conference group.
2. If the Properties dialog box does not automatically open, choose Edit > Properties and enter the name of the conference group.

   End the conference group name with CG to make its name easily identifiable as a conference group.
3. Click OK.

Here's the set of conference groups Avalon Academy ends up with.



Adding conferences

We will create the following conferences for the following groups in the General Conferences folder on the administrator's Desktop:

Students The Students area already contains the Student Clubs conference. We want to add three more conferences:

- Peer mentoring
- Student forum
- Carpool

Faculty The Faculty area conference already contains a Faculty calendar and a message archive folder. We want to add three more conferences:

- Policy
- Announcements
- General Discussion

Administrators The School Administration area already contains an Announcements conference, a School and a School Admin calendar, and a message archive folder. We want to add four more conferences:

- Personnel
- Management Policy
- Business Plan
- Budget

To create a new conference, choose File > New > New Conference. For more information about creating and naming conferences, see our online help.

Controlling access to conferences

By default, any user who has a subscription to a conference can open it, send items to it, read items that have been posted to it, and view message histories. When you add a conference to a user group's Model Desktop, you are subscribing every member of that group to the conference.

Adding conferences to Model Desktops

The default post office already has Model Desktops for the preconfigured groups with suggested conferences. For information about these groups' Model Desktops, see Chapter 8, "Understanding Model Desktops".

In this section we will add some new conferences to the Students group's Model Desktop.

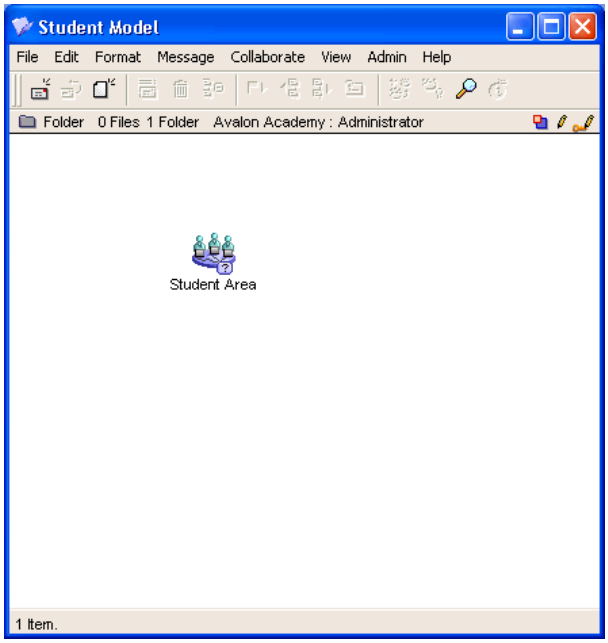
1. Double-click the Student user group and click Model Desktop.

2. Double-click the General Conferences folder on the administrator's Desktop.

3. Select the Student area conference.

4. Select Conferencing >Add to Desktop.
A copy of the conferences will appear on the administrator's Desktop. Drag it to the Model Desktop and arrange as appropriate. Remember, there are conferences along the left side already.

All Students Model Desktop



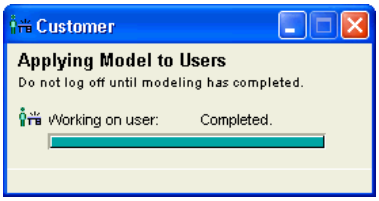
5. Protect the alias on the Model Desktop by choosing File > Properties and selecting Protected. This will prevent users from deleting this item from their Desktops.

6. *optional*
If you want the conference to open automatically the first time each user logs in, choose File > Properties and select Auto open.

7. Close the Model Desktop.

8. Wait for modeling to complete. Do not log off until it has completed. You'll see this message:

Applying Modeling



If you are unhappy with the look of the Model Desktop, you can reopen it and rearrange it at any time. However, remodeling will only occur when an object has been added or deleted, simple rearrangement will not force it. Therefore, add and then delete an object to force remodeling.

To add more conferences to any group's Model Desktop, repeat this procedure.

Model Desktops and multiple groups

When users are in multiple groups, their Desktops are created by combining the contents of all applicable Model Desktops. If you are going to use multiple user groups to control access to conferences, remember that each Model Desktop dictates the exact location of icons on the users' Desktops. Be sure to place icons so that they do not overlap each other.

Subscribing individual users to conferences

When a conference is added to a group's Model Desktop, by default, all users in that user group are subscribed to the conference.

You can also subscribe individual users to conferences or conference groups by adding the user's name in the list of subscribers on the conference permissions form. We will walk through subscribing individual users to conferences in Chapter 14, "Adding users"

Conference permissions

You might want to limit the access of specific users or groups to a conference. For example, you might want all users to be able

to read messages in a certain conference, but you only want a few users to be able to send to it. To control access to a conference, you must set up permissions for the conference.

You can set these permissions for individual conferences or you can use conference groups to set permissions for a group of conferences, much the same way you set privileges for groups of users with user groups.

Understanding conference permissions

Permissions are similar to privileges. But while privileges allow you to control access to a great many FirstClass features, permissions relate exclusively to conferences. For a complete explanation of the various permissions and how they interact with privileges, see our online help.

The important thing to remember about permissions is that when a user accesses a conference, FirstClass will stop checking permissions the first time it comes across the user's name or a user group he belongs to (from the top down). Therefore, if you want an individual user to have greater access to a conference than the rest of the users in a user group he belongs to, enter his name first in the list. No further checking will be done. The same applies to two groups with different permissions but with overlapping membership. An example would be the Employee and Faculty groups. Since all faculty are also employees, they belong to both user groups. If you put the Employees group first, no further checking would be done for any of the faculty.

Setting permissions on conference groups

Now that we have our conference groups, we should use them to set standard permissions. Let's start with Internet News CG.

1. Double-click the Internet News CG conference group.
2. Click Group Permissions.
3. Newsgroups can generate a lot of content very quickly. We don't want too much disk space taken up by such content. We'll set Expire old messages when number of items reaches to 500. This will stop heavy usage newsgroups from getting too cluttered.

4. Since some newsgroups have very little traffic, we'll set Default message expiry to 30 days. This will stop us from having low volume newgroups with messages many months old.

5. In the Who field, we'll enter the Faculty user group. In the associated Access field, we'll select Reader. This means all faculty members have Reader access to all conferences that belong to this group. Of course, they still can't see the conference, but when they are subscribed to it, by having it added to their Model Desktops, they will have this access.

6. Now we'll enter Internet in the Who field and select Contributor in the associated Access field. This will specifically allow the Internet gateway (every system with Internet Services installed will have a gateway named Internet) to permit incoming mail.

7. Finally, we'll enter All Users in the Who field and select Disallowed. This ensures students and all unauthorized users cannot access this conference.

Note This practice should be followed for all conference permissions as it ensures no unauthorized users who have accessed the system can have access to your conferences and the information in them.

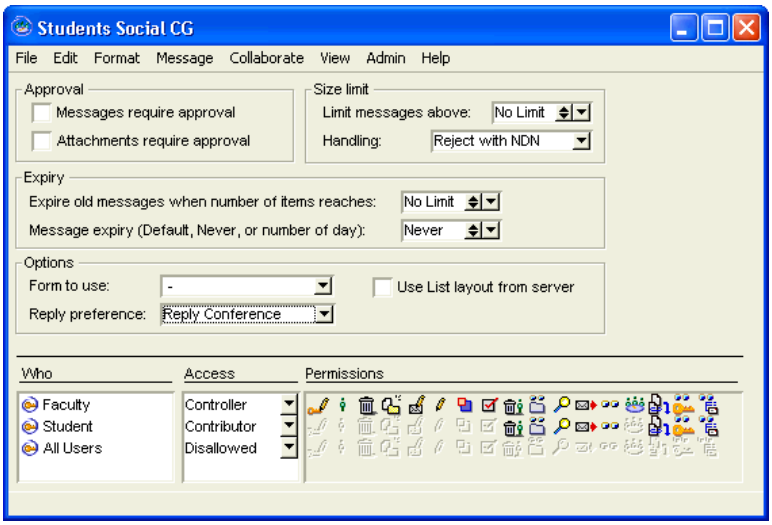
Warning If a user adds a link to a conference on his home page, it is then accessible by anyone who accesses the home page. Disallowing All Users ensures that only authorized users can follow the link and open the conference.

Internet News CG conference group

Now we'll set some permissions on the Students Social CG conference group.

1. We set Default message expiry to Never since we don't want course materials lost.
2. We set Reply Preference to Automatic. This will direct all replies to the conference alone. This is the way we want students to communicate.
3. We add the Faculty and Students user groups and give them Controller and Contributor access respectively. This will allow teachers to control conferences and students to read and post messages.
4. Next, as described in the previous example, we'll enter All Users and choose Disallowed to protect the information in this conference.

Students Social CG conference group



Setting individual conference permissions

Now that we have set up our conference groups, we can start adding conferences to them. We do this by entering the name of the conference group on the specific conference's permission form. This is similar to the way we add users to user groups, by entering the name of the user group on their User Information forms.

1. Select the Peer mentoring conference.
2. Select Conferencing > Permissions. This form looks just like the Conference group permissions form with two differences: the fields Conference is a member of these groups and List of subscribers.
3. For Conference is a member of these groups, enter Students Social CG. Now this conference inherits the settings of the Students Social CG conference group.

   Note You can also make a conference belong to an organizational unit by adding the organizational unit name in this field.

4. We'll leave List of subscribers blank for the time being since we haven't created any users yet.

We'll repeat this process for each of the conferences we created, adding them to the appropriate group.

For a full description of all conference permissions settings and options, see our online help.

Making conferences unlisted

By default, all conferences are added automatically to the FirstClass Directory. Remember, just because the conference is listed in the Directory, not all users can see it or address mail to it. A user can only see a conference if he is subscribed to it, or a link to the conference is placed on his Model Desktop or in a public area (within another conference he has access to). Directory filtering is also used to determine what a user or group of users sees in the Directory. A user can only contribute to a conference if he has permission to do so, based on the conference permissions form.

Still, you may have conferences you do not want listed in the FirstClass Directory at all. You can make the conference unlisted by doing the following:

1. Open the conference permissions form.
2. Click Directory info.
3. Select Unlisted.
4. Click OK.

Other approaches

Here are a couple of other ways to create and configure conferences:

- We could have not created any Model Desktops and used permissions, privileges, and subscriptions to control access to conferences. However, Model Desktops is an important feature of FirstClass that makes organizing your system and users much easier.
- We could have subscribed individual users to conferences, and controlled conference permissions for individual users

instead of groups. This would result in a system that is very disorganized and difficult to administer.

- We could have used personal conferences, created by users rather than the administrator, for confidential material. This would add some security, but it would place a burden upon the users to create and administer the conferences.

This list is not exhaustive. Your conference structure should be tailored to best suit your school's needs.

Using group and resource calendars

So far, we have created user groups and organizational units to organize our FirstClass system, we have used Directory filtering and Model Desktops to manage what users will see and how they use our system, and we have created conferences to help our users communicate within our organization. One resource we haven't discussed using at the group level is calendars.

In this chapter, we will learn about the All Calendars group and discuss how using group and resource calendars can enhance your FirstClass collaborative environment.

Group and resource calendars essentially work like conferences, in that one calendar can be used by groups of users to help users communicate. In the case of calendars, users will be communicating about scheduling meetings, booking meeting locations, and booking resources for a group of users, instead of engaging in online discussion.

13

Using the All Calendars group

Like the All Users and All Conferences groups, the All Calendars group is a standard user group that resides in the Groups folder on the administrator's Desktop. All choices that you make for this group become the defaults for all calendars created on your system. This includes all personal calendars on users' Desktops, all group calendars and all resource calendars. You may wish to create separate calendar groups to deal specifically with each type of calendar, making your system easier to administer.

Using group calendars

FirstClass calendars work much like conferences. Just as you can create a new conference, you can also create a new calendar for a specific purpose. Group calendars enable you to organize and schedule tasks and appointments for various projects and activities. The difference between a personal calendar and a group calendar is that a personal calendar is directly associated with a user, and each user can have only one. A group calendar has a unique name and enables a set of people to coordinate their schedules and tasks.

Users on your system can use group calendars in tandem with group conferences for collaboration purposes. As with conferences, you can create group calendars and either set calendar permissions specific to that calendar, or add the calendar to an existing calendar group.

To create a group calendar:

1. Open the Conferences folder on the administrator's Desktop.
2. Open the conference where you want to add a group calendar.
3. Choose File > New > New Group Calendar.
4. Choose File > Properties to name the group calendar and protect it.
5. Modify the permissions as required.

Once the group calendar is created and in place, users should be made aware of its purpose and encouraged to use it accordingly to improve collaboration and communication.

Using resource calendars

A resource calendar is a public calendar that represents a specific resource, such as a projector, or a meeting room. A resource calendar is updated when users book the resource as part of creating a calendar event.

To create a resource calendar:

1. Open the Conferences folder on the administrator's Desktop.
2. Open the conference where you want to add a resource calendar.
3. Choose File > New > New Resource Calendar.
4. Choose File > Properties to name the group calendar and protect it.
5. Modify the permissions as required.

When students or teachers set up meetings or presentations, they can book a room and equipment at the same time on the Scheduling tab, in the same way as they invite other participants. However, instead of entering the name on the Participants subtab, enter the resource calendar name on the Resources subtab. The conflict resolution feature works with Resource calendars as well as all other calendars, so users can be sure the resources they are booking are available for the duration of the meeting time.

Setting calendar permissions

As with conferences, you can create group calendars and either set calendar permissions from scratch or add your calendar to an existing calendar group.

Calendar permissions work much the same way as conference permissions. You can control which groups or individuals can view the calendar and to what detail, who can add tasks and events, and who can modify tasks and events. When setting permissions, you should consider the following:

- what groups or individuals will have access to the calendar?
- will the calendar be in a conference, or added to users' Desktops?
- what types of access do you want groups to have (read-only, modify, create, etc.)?

Once you have determined how users will use a calendar, use the Calendar Permissions form to set permissions. For a list of the available permissions, see our online help.

Group collaboration using group and resource calendars

Calendars are very helpful for students working cooperatively on group projects. Group work can be difficult to organize when there are no, or few, face-to-face meetings. Group calendars can go a long way in providing a strong project management tool. Students can use group calendars to book meetings and work sessions, locations, and required resources. Both tasks and timed events are posted and available to all employees with rights to view these calendars. Furthermore, scheduling conflicts can be resolved immediately at the time of booking.

Students can easily fall behind in daily and weekly class assignments. Due to a lack of experience in managing their time, students may not plan their semester class work effectively. Group calendars provide students with the ability to view important dates and access class calendars.

For example, at the beginning of the year the teacher can input all due dates, quiz dates, test and exam dates in a group calendar. By placing this information in a public calendar in a conference where all students in the class can see it allows them to manage their workloads effectively. As well, proper scheduling can eliminate unnecessary surprises. Changes can be updated immediately without students having to wait for the next class. Also, if students have a conflict with some of the dates, you can find a solution well ahead of schedule.

Adding users

Now that we have our system structure defined and built, using Directory filtering, Model Desktops, groups, conferences, and calendars, we are ready to start adding users. If you have many users to add to your system, we suggest you use batch administration. For an overview of batch administration, see Chapter 10, “Using batch administration”, and for detailed batch administration commands and syntax, see our online help.

The number of users you can register on your system is limited by the number of accounts, or FirstClass Desktops, for which your system is licensed. You can increase this number by purchasing more licenses from your Centrinity sales representative or reseller. For more information about classes of users and types of sessions, see Chapter 3, “FirstClass server concepts”.

In this chapter, we’re going to add one user to each of our user groups. Their names are Joe Parent, Joe IT, Joe Adminstaff, and Joe Student.

Adding a user to the parent group

1. Choose Admin > Add New User.
2. Enter the appropriate personal information.

   We’ve given Joe Parent a user ID of Jparent.

   Initials, Address, Tel, and Fax fields are optional.
3. Select the class of user.

   Our parents use session licenses, so they are Remote users.

   For information about classes of users, see “Understanding how users connect” on page 17.

4. Do not enter anything at Voice DN and Voice password.

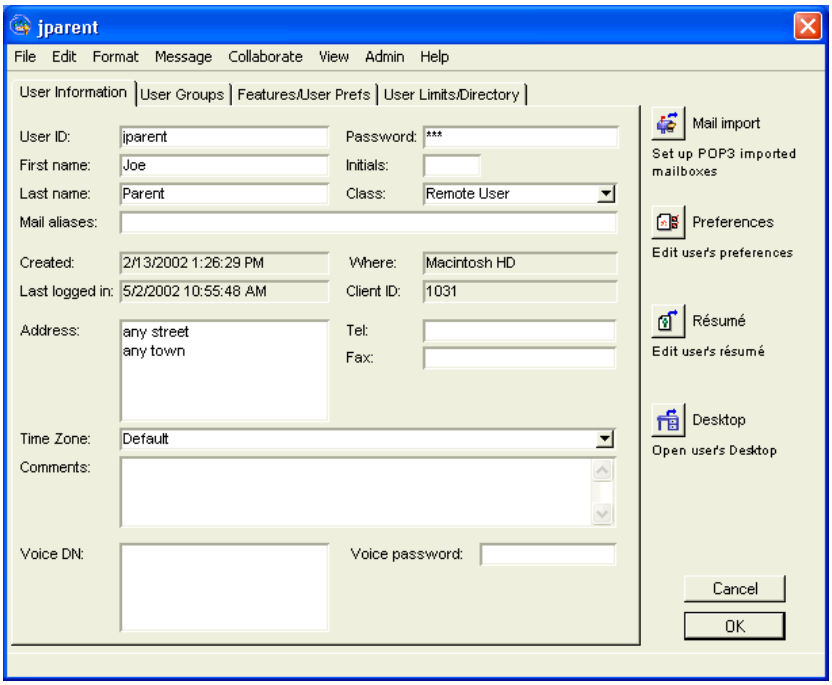
   Since we have not installed FirstClass Voice Services to enable FirstClass Unified Communications, these fields will be left blank. If you are a FirstClass Unified Communications customer, see *FirstClass Voice Services Administrator's Guide*.

5. On the User Groups tab, enter Parent.

   This is the only group Joe Parent will be a member of, besides the standard user groups. For information about standard user groups, see "Standard user groups and how they work" on page 73.

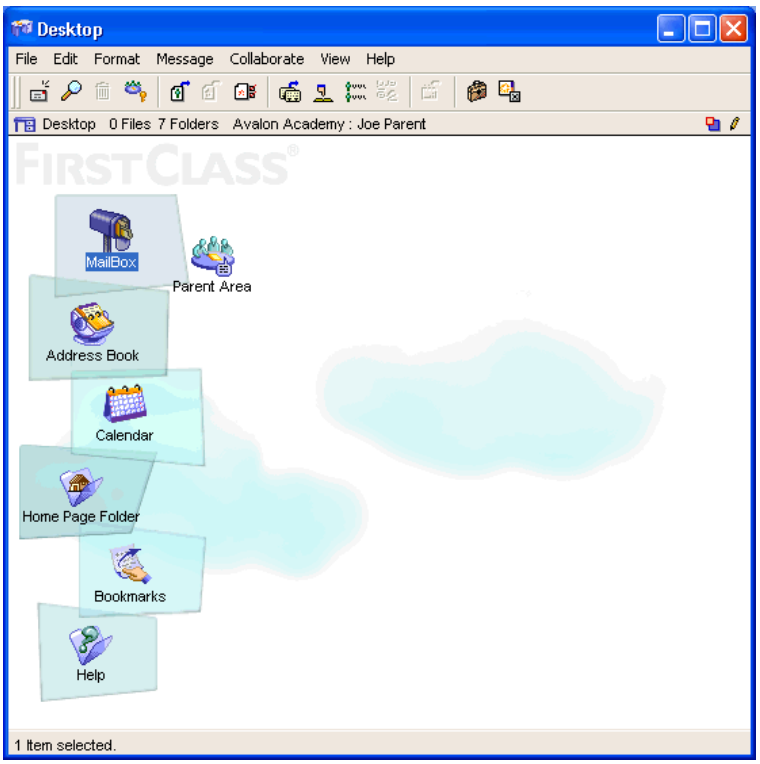
6. Click Ok.

Joe Parent's User Information form



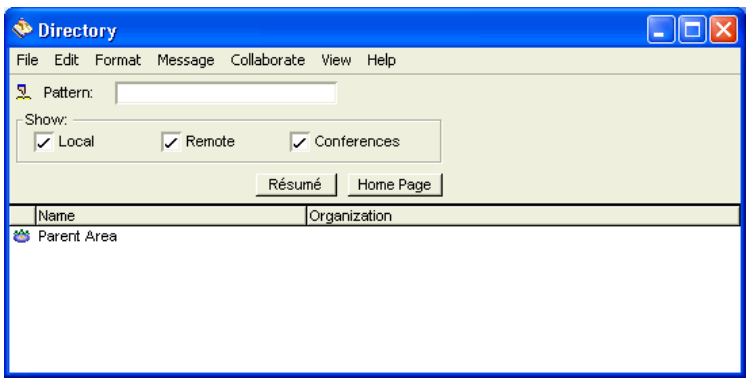
Joe Parent is now a user on our system. He is a member of the All Users, Parents, and Remote Users user groups. When he logs in, he'll see this:

Joe Parent's Desktop



When he chooses Conferencing > Directory, he'll see this:

Joe Parent's Directory view



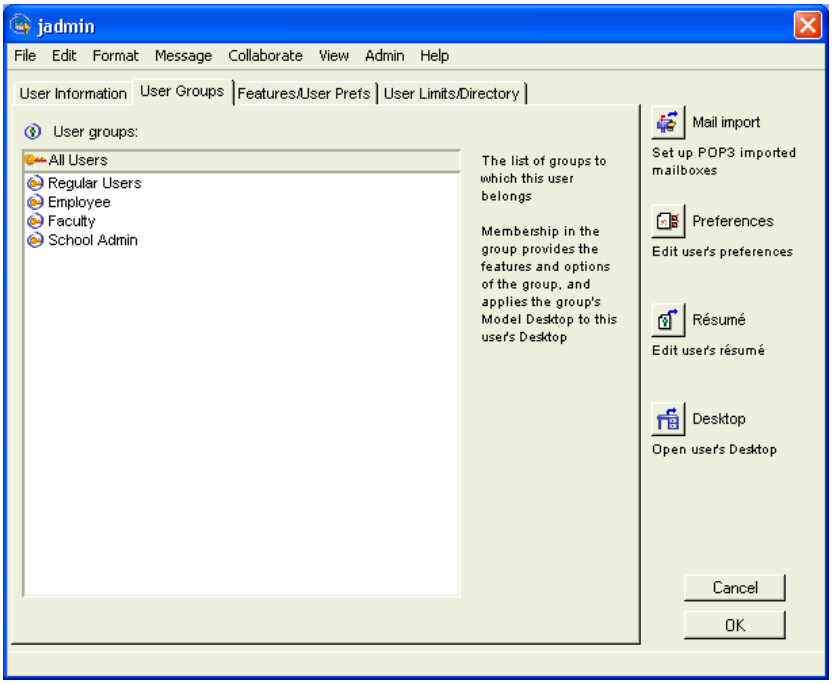
Without having to modify Joe's account at all, we've given him precisely the features we wanted him to have, just by adding him to the Parents user group.

Adding users with multiple user groups

Following the procedure described above, we'll add an account for Joe Adminstaff. It's just like the Joe Parent account except Joe Adminstaff is a Regular user, not a Remote user.

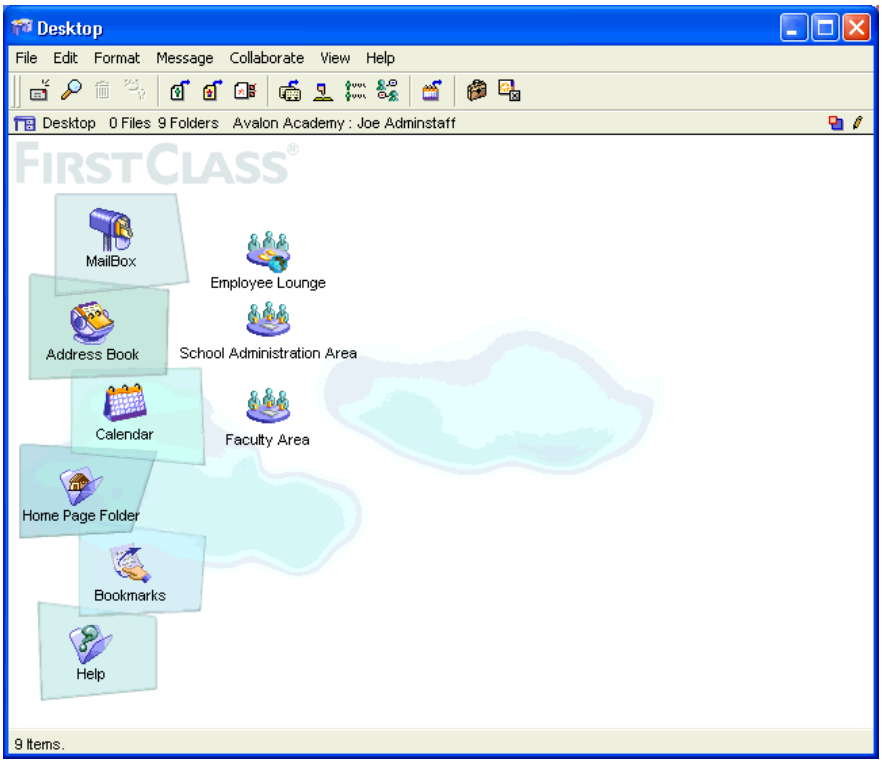
On the User Groups tab, there will be a significant difference from Joe Parent's User Information form. Since user groups override the privileges set by groups above them in the list, we have to order the user groups properly. Since School Administrators have more Privileges than Employees, we place them lower on the list.

Jadminstaff's user groups



When Joe Adminstaff logs in, he sees this:

Jadminstaff's Desktop



Note that Joe Adminstaff has both the Employees and School Administrators conferences. Since he belongs to both groups, he gets a combination of both Model Desktops.

Desktop modeling can become fairly complex as you add more user groups and more Model Desktops. By combining different user groups with different Model Desktops you can create a wide variety of Desktops meeting the needs of many different kinds of users.

Following the steps and principles used to create Joe Parent's and Joe Adminstaff's accounts, add accounts for Joe IT and Joe Teacher.

Adding some security

In "Subadministrators" on page 11, we said we were deliberately keeping some administration tools away from the

subadministrators for security reasons. We're going to make one change to Joe Adminstaff's User Information form:

1. Log into the main administrator account, not a subadministrator account.
2. Open Joe Adminstaff's User Information form.
3. On the Features tab, select Secure and click Ok.

Now, subadministrators cannot easily look at Joe Adminstaff's Desktop or Mailbox. If you removed the General Conferences folder from the Sub Admin folder, subadministrators cannot easily see the conferences administrators are using. If you removed the Groups folder from the Sub Admin folder, subadministrator's cannot easily see the Model Desktop for administrators and conferences on it. Subadministrators do not have the authority to change the setting of the Secure field.

Warning We said "cannot easily". Since nothing can be truly hidden from an administrator (even a subadministrator), there are ways for them to see the conferences on the managers' Desktops, but this will at least make it more difficult.

No other users will be able to see or access these conferences unless they are members of the Administrators user group and have been expressly given permission.

Making users unlisted

You may want some user accounts to be hidden in the Directory. This way, other users cannot see the user to address mail to him, and he will not appear in Who's online. This could be useful for administrators or subadministrators who want to work on the system without distractions. To make a user unlisted, turn on the Unlisted feature on the Features tab of the User Information form.

Subscribing users to conferences

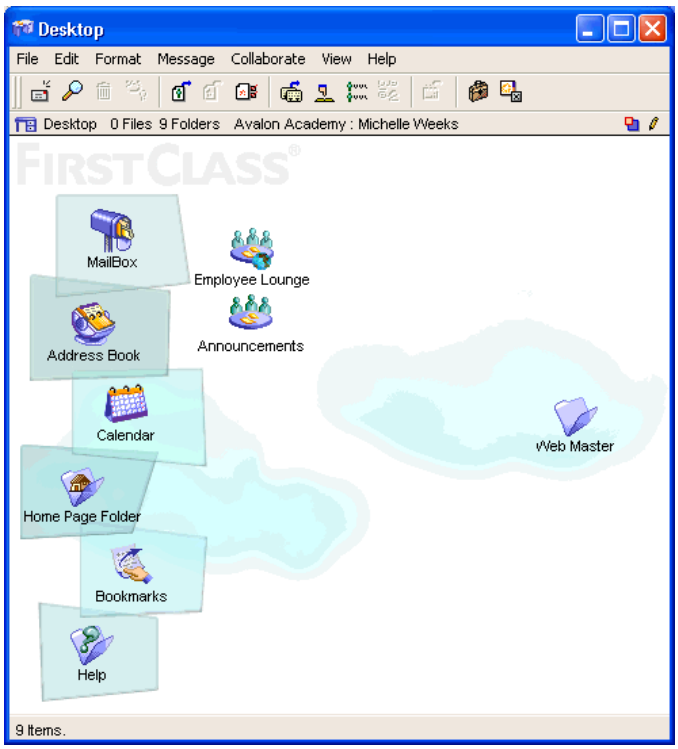
So far, we've used Model Desktops to make conferences available to our users. However, if you open one of your user's Desktops and look at the permissions for one of the conferences

you have placed there, you'll see he is listed as a subscriber. Subscribing merely means placing a conference on a user's Desktop. By default, all users with a particular conference on their Model Desktop will be listed as a subscriber of that conference.

To satisfy individual user needs, we can also subscribe individual users to conferences. When you subscribe a user to a conference, you are merely placing a link to that conference on the user's Desktop. You must also remember to give the user permissions to use the conference in a way that is consistent with his role.

For example, Michelle Weeks is the webmaster for Avalon Academy. Although she is not a member of the Faculty user group, she will monitor the Announcements conference to keep the web site up to date. We will add the Announcements conference to her Desktop by subscribing her to the conference:

1. Log in as administrator.
2. Open General Conferences and Faculty area.
3. Select Announcements.
4. Choose Collaborate > Permissions.
5. In the List of subscribers field, enter Michelle Weeks.
6. At Who, enter Michelle Weeks and select Reader at access.
7. Click OK.
8. Log in as Michelle Weeks.



9. The Announcements conference has appeared on her Desktop. She can open it and read messages, but cannot send messages to this conference.

Public mail lists and chats

There are two methods of communication that we have not addressed: mail lists and chats. These communications tools include both public and private versions. This chapter discusses public mail lists and public chats. For information about the private versions, see our online help.

Public mail lists

We said administrators wanted a way to send direct communications to all parents. A mail list lets you broadcast messages directly into people's Mailboxes where they are likely to notice them immediately. This way, you are sure users will get the message.

For most regular communication and all two-way communication, conferences are a better solution since they decrease the number of messages in users' Mailboxes and they require less maintenance. When you add users to your system, you have to remember to add them to the appropriate public mail lists. If you use conferences and Model Desktops, they will be added automatically. If a conference will meet your communication needs, use it instead.

A mail list is an excellent solution for groups of users who do not have mail addresses on the local server and may only log in from time to time to view specific conferences. The mail list for these users would be made up of mainly Internet email addresses.

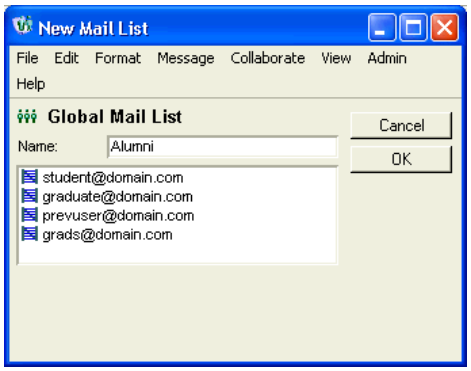
For Avalon Academy, a mail list is a good solution for alumni, since few of them have addresses on our local server, or a remote server connected to Avalon Academy by a gateway, and our mail list will consist mostly of Internet addresses. If we want to send all alumni an important message and we want to be sure they

receive it quickly, we will send the message to the mail list. If we have regular school updates, we can post this information to the website instead.

For the steps involved in adding a public mail list, see our online help.

Avalon Academy's Alumni mail list looks like this:

Public mail list



Controlling access to mail lists

When you add a mail list, FirstClass adds its name to the Directory. To prevent the names of private or sensitive mail lists from appearing in the Directory, the administrator can use Directory filtering and group privileges to control who sees them, or make them unlisted or local only.

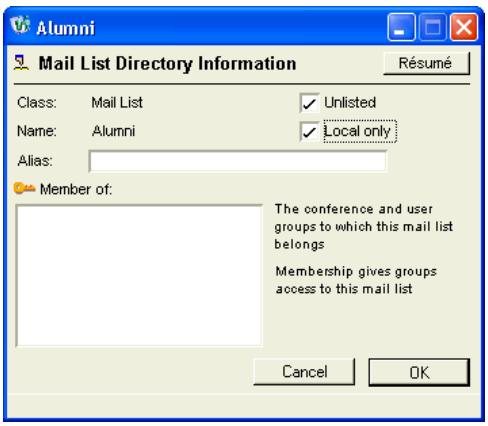
Using Directory filters and privileges to control access

If you have been following the system setup in this book and you add a public mail list called Alumni available only to administrators, only administrators will be able to see this mail list in the Directory and address mail to it.

To add the mail list to a group:

1. Choose Admin > List Directory.
2. Select Other only at Show.
3. Click Search.
4. Double-click the mail list you want to change.

Mail list Directory information



5. Add the School Admin group in the Member of field.

   You can enter either conference group or user group names. This allows you to create lists that are accessible to specific groups and not to others.

The filtering rules that apply to the group are inherited by the mail list. When logged in as Joe Teacher, you will not see the Alumni mail list in the Directory and cannot address a message to it. When logged in as Joe Adminstaff, you can.

Using groups to control access to mail lists

Another solution to keeping a mail list private is to do the following:

1. Create a user group called Mail lists UG.
2. On the Directory tab, specify the groups who will be allowed to see the mail list at Allow this group to see these groups.
3. Add the mail list you created to the Mail list UG group.

Making mail lists unlisted or local only

If you do not want to add your mail list to a group, you can still protect the privacy of your mail list by making it unlisted, or local only.

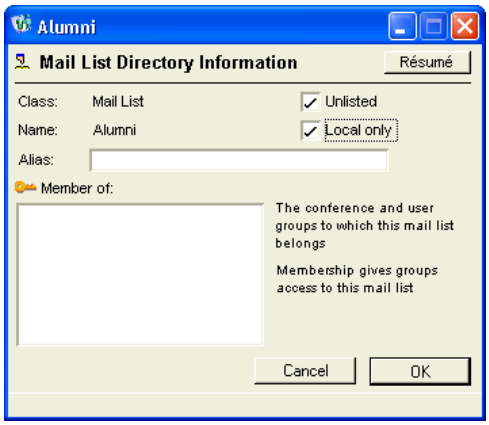
If the mail list is unlisted, only users with the View Unlisted privilege can see the mail list in the Directory.

If the public mail list is local only, users on your server can view the mail list in the Directory, but users connecting to your server through a gateway cannot.

To make your mail list unlisted or local only, follow these steps:

1. Choose Admin > List Directory.
2. Select Other only at Show.
3. Click Search.
4. Double-click the mail list you want to change.

Unlisted mail list



5. Modify the following fields as needed:

Unlisted Allows only users with the View Unlisted privilege to send mail to this list. Other users won't see this list in the Directory.

Local Only Specifies that this is the local portion of a distributed mail list, or a local mail list that is not sent across gateways. On a multiple-server network, you might prefer not to duplicate entire lists on each server on the network. Instead, you can set up a local list on each server. The local list must contain the list members who are registered on that server, plus an entry for every other server having a local portion of the distributed list.

6. Click OK.

Public chats

FirstClass supports two types of chats: private chats, initiated by users, and public chats, set up and maintained by the administrator.

To add a public chat, choose Admin > Add > Chat file.

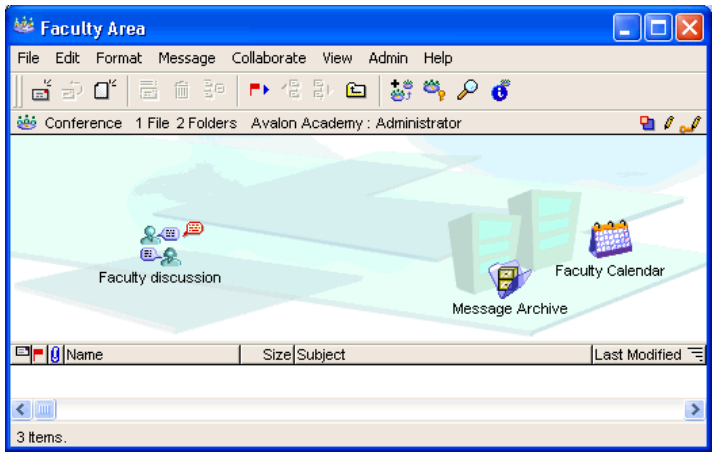
Public chats usually pertain to a specific topic. You might want to add public chats for several topics. To organize the chats, create a Chats folder inside the General Conferences folder.

To enter a public chat, double-click the associated icon. In FirstClass, each public chat has an icon that looks like this:

A red chat balloon beside the public chat icon indicates that one or more people are currently participating in the chat.

In this example, Faculty discussion is a public chat in the Faculty Area conference.

Public chat



The red balloon indicates that there are currently people participating in the chat.

A participant in a public chat can invite any other user to join the chat, the same way as in a private chat. The invited party does not need to have access to the conference where the public chat is located to accept a chat invitation.

Adding gateways

In Chapter 3, “FirstClass server concepts”, we discussed how gateways work and how to use gateways to expand your FirstClass system. In this chapter, we’ll be walking through a simple gateway connection and looking at the basic tasks you’ll perform after setting up a gateway. We’ll examine some of the issues involved in planning gateways and routes, and we’ll discuss automatic and manual multisite mail considerations.

Note Before planning new gateways and routes, you should know how all the servers in your FirstClass network interact with each other. We recommend that you prepare a map of your network.

Adding the Avalon Academy - Husky Planes gateway

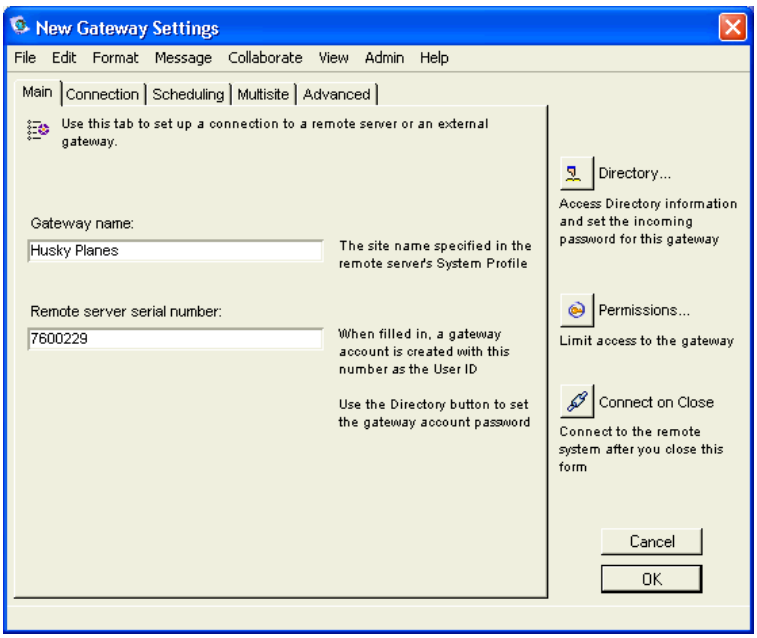
Avalon Academy needs to set up a server-to-server gateway with one of its suppliers, a business site called Husky Planes. Before we begin there is some information we need to gather and some decisions we have to make.

- We need the server serial number of the Husky Planes server. This number is displayed on the Server tab of the System Profile.
- We need to tell Husky Planes our server serial number.
- We need to find out Husky Planes’s site name. This is the name set on the Server tab of the System Profile.
- We need to tell Husky Planes our site name.
- We need to tell Husky Planes the password we are assigning the gateway.

- We need to find out the password Husky Planes has assigned its gateway.
- We need to decide how we are going to connect.
- Based on our connection decision, we need to get connection information.
- We need to decide what schedule we want to have for gateway connections.
- We need to decide how much information in our Directory we want Husky Planes to have.

With this information in hand, open the Gateways folder on the administrator's Desktop, and choose Admin > Add > Gateway Settings.

Gateway Settings - Main

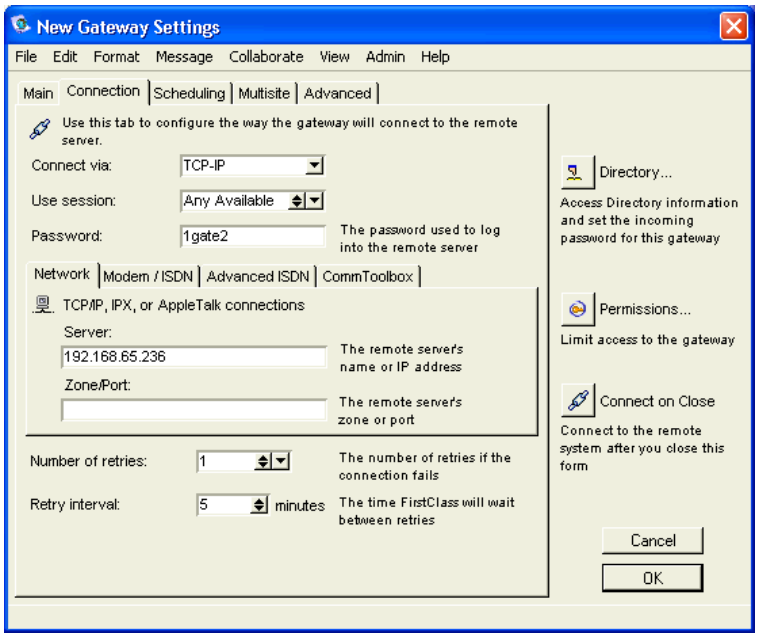


On the Main tab, we enter some basic information about the gateway:

Gateway name	Husky Planes, this is the site name Husky Planes provided us with.

Remote server serial number	The serial number of the Husky Planes FirstClass server.

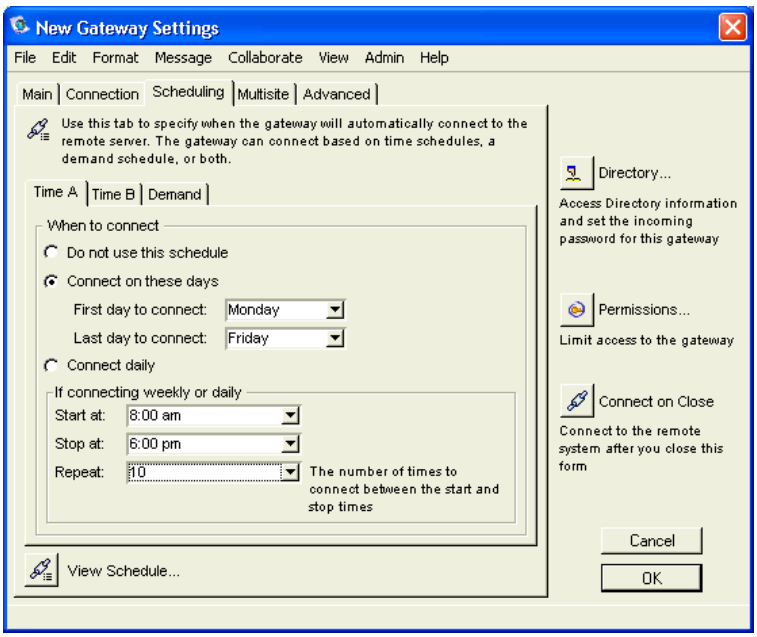
Gateway Settings - Connection



On the Connection tab, we choose a connection method and then provide the necessary configuration information.

Connect via	TCP-IP, the preferred connection method.
Password	This is the password our gateway will use to connect to the Husky Planes server.
Server	The IP address of the Husky Planes server.
Zone/Port	If connecting by AppleTalk, enter the zone. If connecting by TCP, enter the destination port.
Number of retries	3, if we can't connect after 3 retries something is wrong and will have to be investigated.
Retry interval	5 minutes, enough time so any transient difficulties will vanish.

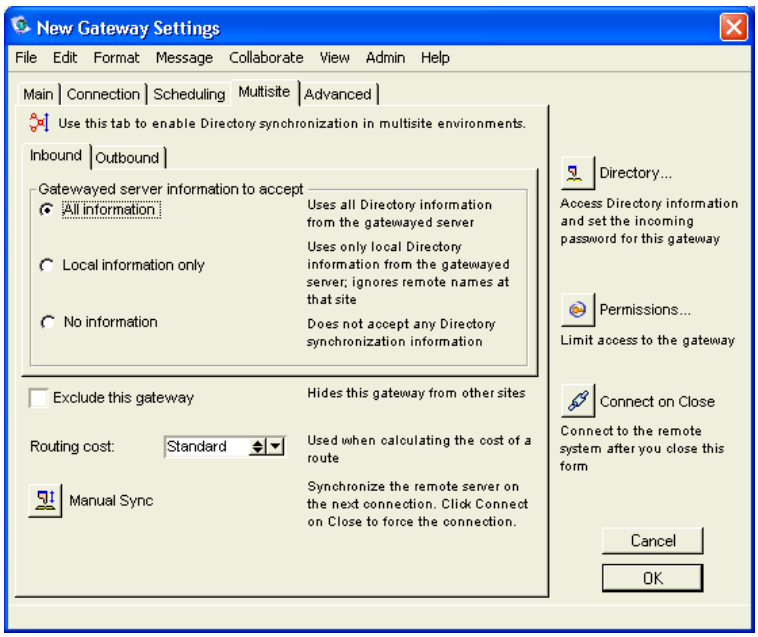
Gateway Settings - Scheduling



We're only completing one schedule on the Scheduling tab, since we just have a simple gateway connection.

Connect on these days	We've chosen this option because Husky Planes is open standard business hours during the week.
Start at	8:00 am, the beginning of Husky Planes' work day.
Stop at	6:00 pm, the end of Husky Planes' work day.
Repeat	10, since 8:00 am to 6:00 pm is 10 hours, this means we will connect once every hour. Since mail to and from Husky Planes isn't urgent, this is sufficient.

Gateway Settings - Multisite Inbound



The decisions we make on the Multisite - Inbound tab will affect how multisite mail works. You might want to read “Setting up multisite mail” on page 176 before you make any further decisions about your gateways.

Gatewayed server information to accept Here, we define what information we want to receive. We want to accept all information from the Husky Planes site.

Exclude this gateway This checkbox can be a little confusing. If selected, it excludes the gateway we are defining (in this case Husky Planes) from Directory synchronization with other gateways. This way, we can keep this gateway hidden from others. We’ve decided this isn’t important to us.

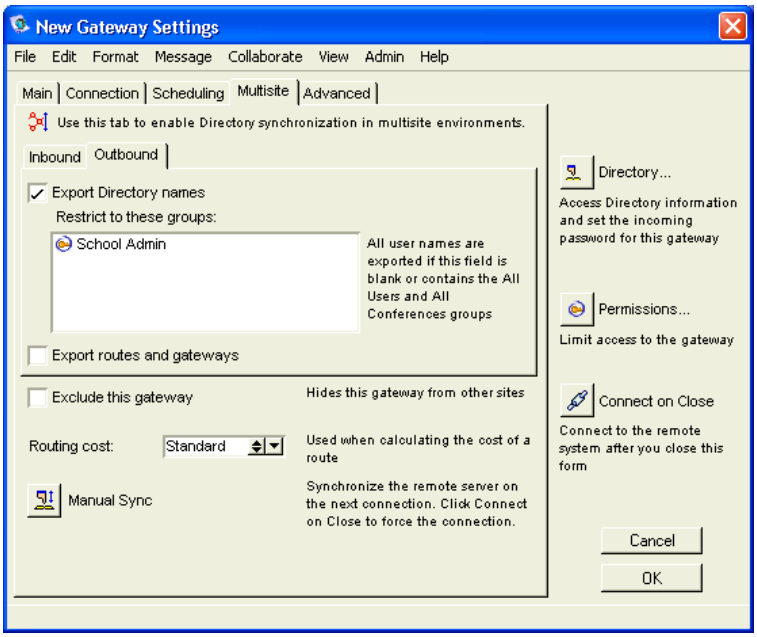
Routing cost

For regular gateways, use Standard.
If this gateway is very expensive to use (for example, an ISDN connection), or one that you do not wish to use, enter a high value for the Routing cost (>1000).
If this is a preferred gateway you wish to use for all routing, enter a low value (1).

Manual sync

If you want the changes to this gateway to be applied immediately, click Manual sync then click Connect on close. The changes will be applied when you close the form and the gateway connects. If there is no urgency, the changes will be applied on the next scheduled connection.

Gateway Settings - Multisite Outbound

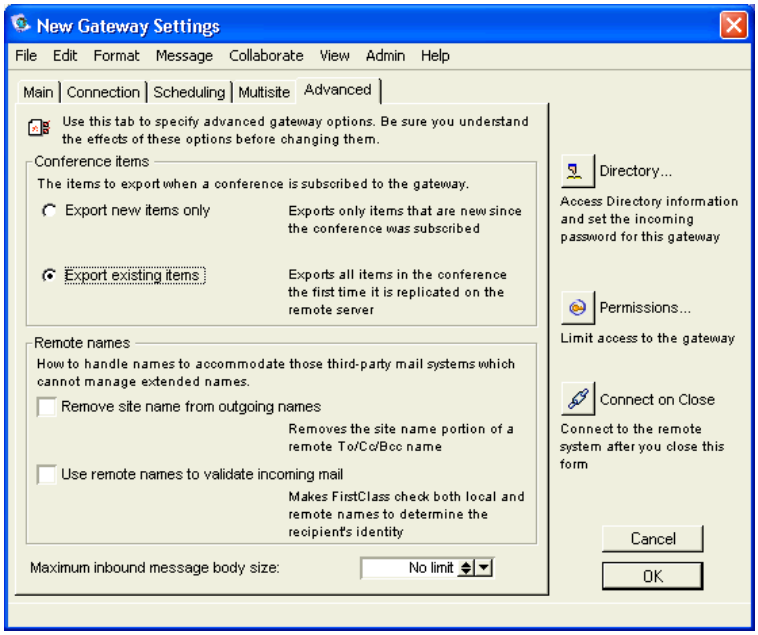


On the Multisite - Outbound tab, we define what Directory information we want to send to Husky Planes when we perform Directory synchronization.

Export Directory names	Yes, we want Directory synchronization with Husky Planes. This means users at our site will show up in their Directory. It will make addressing email easier.
Restrict to these groups	Husky Planes only needs to deal with our Administrators, so we are restricting the Directory information we send them to members of that User Group.
Export routes and gateways	Select this only if you want the remote site to have access to all our route and gateway names in their Directory.

Again, the decisions we make on this tab will affect how multisite mail works. You might want to read “Setting up multisite mail” on page 176 before you make any further decisions about your gateways.

Gateway Settings - Advanced



On the Advanced tab, we will set some options about synchronization.

Since this is a simple gateway between two FirstClass servers with no third-party software involved, we select Export existing items. We want Husky Planes to receive all the data in the conferences we will subscribe them to.

Save the Gateway Settings form. You can set the name of the gateway by using File > Properties (Windows) or File > Get Info (Mac OS).

Setting the password

Click Directory on the Gateway form. Enter the gateway password in the appropriate field. This is the password the Husky Planes gateway will use to connect to our server.

Testing the gateway

The simplest way to check your gateway setup is to log into the gateway account on both the local and remote servers.

To log into the remote server, use the serial number of your local server as the user ID. To log into the local server, use the serial number of the remote server as the user ID. In both cases, use the gateway password as the login password.

Once you are logged in, you can perform the following tasks:

- prevent one or more messages in the gateway mailbox from being transferred

  To do so, remove the Unread flag by clicking the flag while pressing Option (Mac OS) or Ctrl (Windows).

- force a message to be re-sent

  To do so, click to the right of the Mail icon while pressing Option (Mac OS) or Ctrl (Windows). The Unread flag will appear beside the item.

- verify that the correct conferences are being replicated.

  For more information, see “Setting up conference replication” on page 173.

Forcing a manual connection

You might want to force a manual gateway connection immediately after configuring the gateway, or during

troubleshooting, to force conference replication. To force a manual connection, see our online help.

Setting up conference replication

In addition to allowing you to exchange private mail between servers, gateways also allow you to replicate conferences. This means that a complete copy of a conference with all its contents can be seen and used on both servers. Any messages posted to the conference on the local server are replicated in the conference on the remote server, and vice versa.

Note Deletions are not synchronized between replicated conferences. Only new and existing items are replicated. Therefore, if a message in a conference must be deleted on all servers, the administrator of the server where the message was deleted must contact the administrators of all systems where the replicated conference exists and tell them to also delete the message.

Conference replication requires coordination between the FirstClass administrators on all servers on which the conference is to be replicated.

To replicate a conference from your server to a remote server, follow the steps in our online help. To set up two-way conference replication, follow the steps both on your server and on the remote server.

Once conference replication has been set up and the remote server contains a conference with the same name as the conference you have set up for replication, items in the local conference will be replicated to the remote conference the next time the gateway connects.

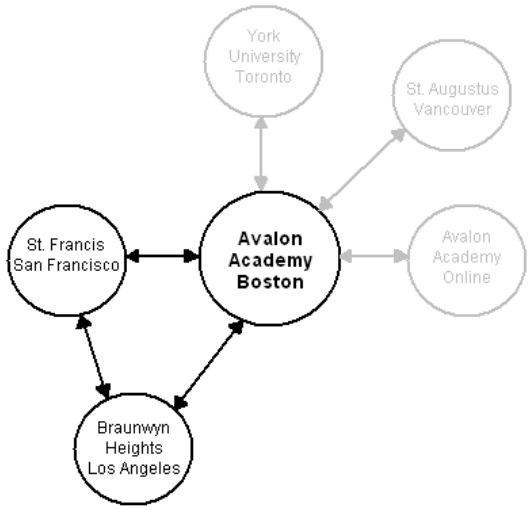
Remember the administrator of the remote server must also set up conference replication on the remote site for items in the conferences on the remote server to be replicated to your local conference.

Avoiding replication loops

A replication loop occurs when you replicate a conference to another server, which replicates it to another server, which replicates it back to your server.

Be careful you do not set up a replication loop. For example, you might set up the following replication scheme:

Conference replication loops



In this example, an item posted in Los Angeles is replicated to Boston, which replicates it to San Francisco, which replicates it back to Los Angeles, which replicates it to Boston.

The FirstClass server detects loops in the item history. When it finds a loop, it reports a Type 1 replication error (both in the server window and in the log file), and breaks the loop. (In the preceding example, the Los Angeles server would report such an error when it receives the item from San Francisco.) When this occurs, contact the other sites participating in the conference to solve the problem. (For example, this could be done by removing the conference alias from the gateway connecting Los Angeles and San Francisco.)

To avoid replication loops, we suggest that you prepare a diagram of your conference replication scheme. Look for servers that can replicate conferences over multiple paths, like Boston

and Los Angeles. These two servers can replicate conferences directly, or indirectly, through San Francisco.

Setting up self–serve replication

If there are many conferences on your server, and several different servers in your network, you may find that the administrators of the other servers may not want or need to replicate all of your conferences. In this case, you can allow the other administrators to select only the conferences on your server that they are interested in. This is called self-serve replication.

To set up self-serve replication, see our online help.

Whenever you create new conferences or delete old ones, update your self-serve conference and keep the other administrators informed.

Controlling access to replicated conferences

One of the standard user groups is named Other Sites. This group contains all gateways and all users on remote servers. You can use this group to increase daily time limits for your gateways and you can also use it to prevent users on other servers from contributing to conferences on your server.

For example, York University Toronto and Avalon Academy Boston have replicated the English conference. York University's FirstClass administrator does not want users on Avalon to contribute directly to the Toronto conference. (Normally, they could do so by addressing mail to "English, York University Toronto".) The administrator wants Avalon users to contribute only to their local conference. Therefore, the York University administrator has disallowed access to the conference by the Other Sites user group.

Remember that conference replication involves a certain amount of communication between the administrators at each site. Permissions are not passed from one server to the other during conference replication. All messages in the conference at the remote site are replicated into your conference, no matter how you define your local conference permissions. Therefore, if you are concerned about submissions from users who are permitted on the remote conference, but are not permitted on

your local conference, contact the other administrator to try to make the conference permissions comparable at both sites.

Setting up multisite mail

Using the Multisite Mail feature of FirstClass, you can set up large distributed mail networks consisting of many servers. FirstClass automatically decides how to route mail from one site to another through all of the intermediate server-to-server gateways.

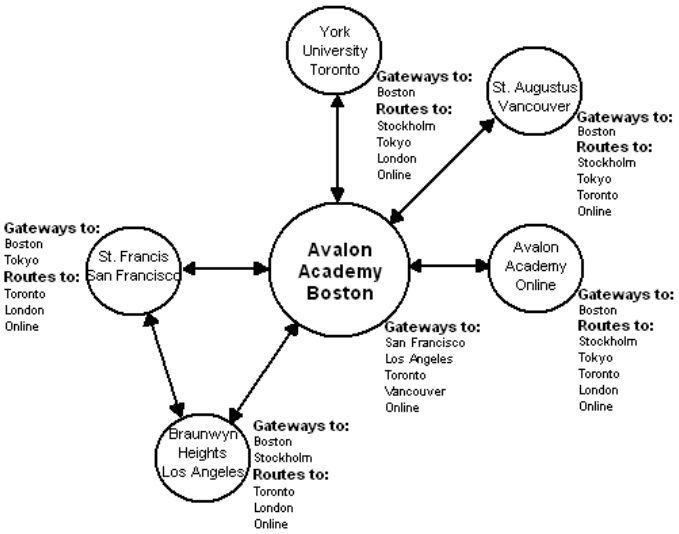
When a FirstClass server receives a piece of mail destined for another site, it first determines whether it has a gateway to that site. If it does, it delivers the mail to the gateway. If it has no gateway, it checks to see if it has a route to that site. A route is a pointer to the next gateway on the path to the destination. If it has a route, it forwards the mail to the gateway specified in the route.

You can only have a route if you have a gateway to another FirstClass server which in turn has a gateway or route to the server that is your final destination. Each intermediary gateway is called a hop. The complete set of hops required to deliver a piece of mail to the end-point of the route is called a path. To add a route, you must first obtain the serial number and site name of the final remote server. This can be obtained from the administrator of the intermediary gateway, or from the administrator of the server to which you are creating the route.

To add a route, see our online help.

Let's look at the Avalon Academy School in Boston network:

Routes



16

On a multisite mail network, users can address mail to routes, just as they can address mail to gateways. For example, a user at York University is sending mail to a user at Braunwyn Heights. The York University server delivers the message to the Avalon Academy Boston gateway and Avalon Academy Boston delivers the message to Braunwyn Heights.

You can also include remote names in your Directory. Remote names are Directory entries for users on remote servers. If you include remote names, users can address mail to the user's name only — they don't need to include the route.

You can add routes and remote names to your Directory manually, but this method is time-consuming and subject to error. Instead, you might prefer to use Directory synchronization to automate the sharing of Directories. Both methods are described in the following sections.

Using Directory synchronization to automate multisite mail

Use Directory synchronization to set up automatic multisite mail in a network. When you designate the users, routes and gateways on your server that you want to synchronize, and then enable synchronization, they are added to the Directories of all the other servers. Users and remote names are defined as remote names, and gateways and routes are defined as routes.

Directory synchronization uses FirstClass batch administration. Each server's Directory is exported from its source server and imported into the target server using batch administration commands. For more information about batch administration, see our online help.

For the steps involved in setting up Directory synchronization, see our online help.

Directory synchronization considerations

Consider the following factors before enabling synchronization on all the servers on your network:

- If your network is large, Directory synchronization can produce very large Directories, containing many thousands of names, making them more difficult to use.
- If your servers communicate over expensive connections, the cost of doing full synchronizations can be high.
- If your Directories are large (2,000 names or more), the Directory export process can slow down your server. Schedule exports for a time when server activity is low.
- If your synchronized Directory will be very large (2,000 names or more), you must allocate more memory on your server. As a guideline, for each session add 10 KB of memory for every 1,000 names.
- If you want some of the benefits of synchronization, but you want to limit the size of the lists, you can perform site synchronization. This produces a smaller synchronization list because it does not include remote names.

Based on these considerations, you may decide that you don't want to set up Directory synchronization on your network. You can still send mail to users at remote servers by adding and

maintaining remote names and routes manually. For more information, see "Manual multisite mail" on page 180.

Types of Directory synchronization

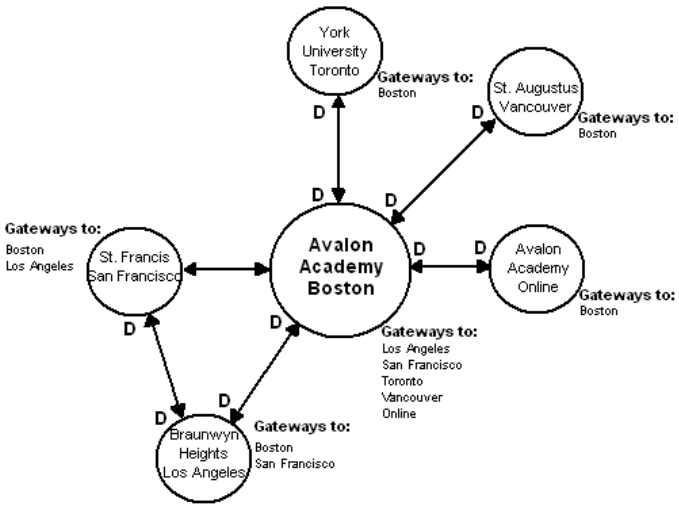
You can schedule one of the following types of Directory synchronization:

Periodic Full Directory Synchronization	Synchronizes your entire Directory, based on a schedule you define.
Demand Directory Synchronization	Synchronizes only when you add or delete an entry in your Directory.
Manual Directory Synchronization	Synchronizes only when you initiate it manually.

Planning your network

If you've decided you want to use Directory synchronization, the next step is to plan your network. Design a propagation scheme for your network, like the one in the following illustration, and be careful not to create replication loops.

Here again is the Avalon Academy network, this time with Directory synchronization enabled (shown as a "D" on each server).



Note that even though the San Francisco and Boston servers have a direct gateway, the Directories are replicated through the Los Angeles server, to avoid replication loops.

Manual multisite mail

The previous section described how to set up automatic multisite mail on your FirstClass network using Directory synchronization. If you decide that you do not want to use site or Directory synchronization, you can still send mail to users at remote servers by adding and maintaining remote names and routes manually. These tasks are described in our online help.

Working with multiple volumes

Large FirstClass systems may require a post office that spans multiple volumes. Additional volumes can be any hard disks installed on your computer, and any network drives to which the computer has read and write access. You cannot use diskettes as additional volumes. When using Mac OS, you might have multiple volumes mounted on your desktop. Typically, each volume corresponds to a physical hard disk. You can also use disk formatting software to create multiple volumes on a single physical disk.

This chapter provides information about using multiple volumes, why you might need multiple volumes, and volume statuses.

17

Why you might need multiple volumes

You might choose to install post offices on multiple volumes in one of the following situations:

- You have a large FirstClass system.

  If you have only a small percentage of your disk available for use, or you run out of disk space, your FirstClass system may be too large for its current hardware configuration.

- You want to control the amount of space available to specific users or conferences.

  For example, a FirstClass server might have three volumes:

  - internal users located on the master volume
  - external users, such as customers and suppliers, on the first secondary volume
  - replicated conferences on the second secondary volume

If either secondary volume becomes full, internal users will not be affected.

Note A multi-volume post office is more complicated to administer. There are no performance, reliability, or feature enhancements if using the multi-volume feature when it is not needed. You should use a single volume if possible.

Multiple volume considerations

You should remember two things when assigning users and conferences to volumes:

- When a user sends a message, FirstClass keeps one copy of the message. This copy stays on the sender's volume until the sender and all recipients have deleted it, or until it expires.
- If you are using conference replication, any conference items received from other servers are stored on the volume containing the conference.

Users who habitually send large attachments, or post large messages to conferences, should be assigned to volumes with ample disk space. Similarly, large, replicated conferences should be placed on volumes with sufficient free space.

Changing the usage status of volumes

Before you can assign users or conferences to a volume, the volume must have a status of Full use. When you install your server, only one volume has that status — the volume on which you installed the FirstClass server. This volume is the master volume.

Trash collection is performed only on Full use volumes. The trash collection task does not check other volumes, even if they contain post offices. This means, a volume that had a status of Full use and was later reduced to Limited use or Browse only will not be checked during trash collection.

You can make Full use of any hard disks installed on your computer, and any network drives to which the computer has read and write access. You cannot make Full use of diskettes.

To change the status of volumes see our online help.

Full use volumes

You can add users and conferences to any Full use volume.

If you subsequently change the status of a Full use volume to Limited use or Browse only, the folder containing the FirstClass post office is not deleted. The volume will not appear on the list of available volumes for your system and the volume will behave as described in the following sections, "Limited use volumes" on page 183 and "Browse only volumes" on page 183.

Limited use volumes

When a volume's status is Limited use, you cannot create new conferences or users on the volume, but you can create aliases. The volume will not be checked during trash collection, and conference information on the volume will not be accessible. Once all items on the volume expire, the volume will disappear.

Browse only volumes

When a volume's status is Browse only, you cannot create any new users, conferences, or aliases. The volume will not be checked during trash collection, and conference information on the volume will not be accessible. Once all items on the volume expire, the volume will disappear.

Maintaining your FirstClass server

Monitoring your system

One of the most important day-to-day activities you will perform as administrator is monitoring your system. Understanding the monitors and log files, and the information they provide will help you proactively maintain your FirstClass system to avoid downtime and major restores.

Checking the Server Monitor

The Server Monitor provides information about how your system is performing by displaying:

- what tasks the server is currently running
- the current load on your hardware
- a summary of what has happened since the server was last restarted.

The Server Monitor also provides information about FirstClass services and mirrored volumes, helping you monitor your entire FirstClass system quickly and easily from one place.

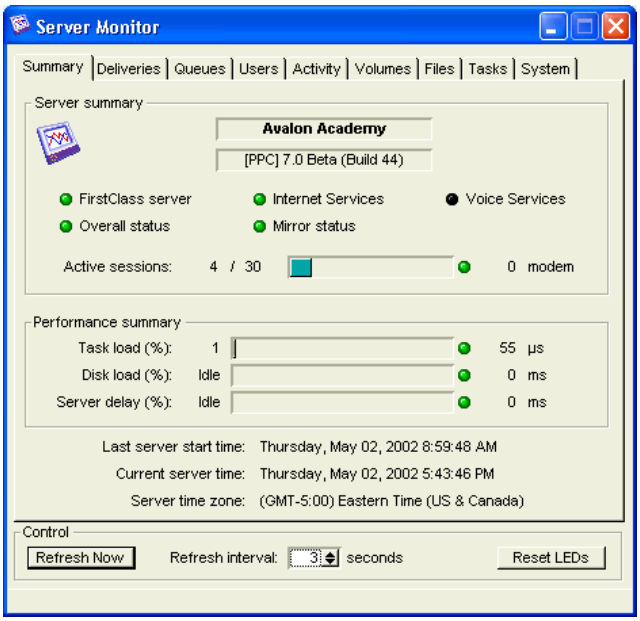
On the administrator's Desktop, double-click Monitors and then Server Monitor to open the Server Monitor form.

The following fields are accessible from all tabs:

Refresh Now	Click to refresh all values on all tabs of the form immediately.
Refresh interval	Set the number of seconds between automatic refreshes.

Reset LEDs Click to reset the LEDs on all tabs. For further details, see the individual fields.

Server Monitor - Summary tab



The server name and software version number are displayed at the top of the form. This avoids confusion when monitoring multiple servers on one machine.

FirstClass server The green LED indicates your FirstClass server is running.

Internet Services The green LED indicates Internet Services is running. A black LED indicates it is off, or not installed.

Voice Services The green LED indicates Voice Services is running. A black LED indicates it is off, or not installed.

Overall status The green LED indicates the overall server components are functioning correctly. If any LED on any tab of this form is amber or red, this LED will be also be amber or red and you should investigate where the problem is on your system.

Mirror status The green LED indicates mirroring is functioning normally. A black LED indicates mirroring is not working, or not configured.

Active sessions The number of network and modem sessions currently in use vs. the number of configured sessions. The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs.
If the LED is often amber or red, you should consider increasing the number of concurrent sessions allowed on your system. For information about session limits, see "Understanding sessions" on page 16.

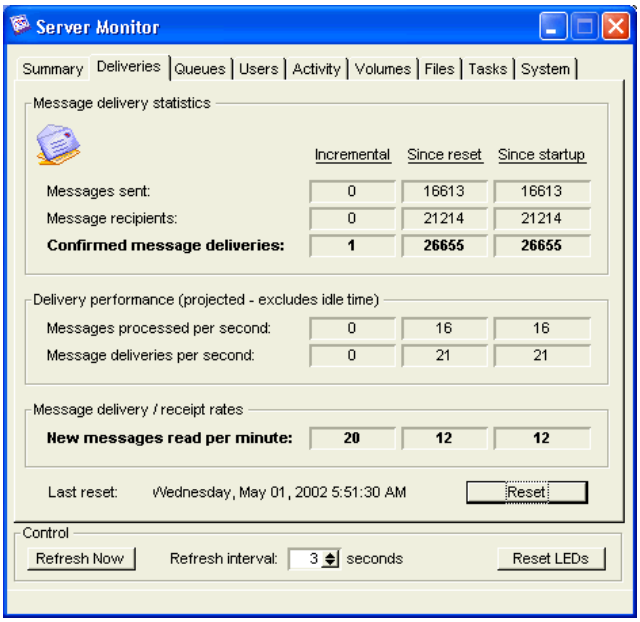
Task load The percentage of computer capacity the FirstClass server is using. The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs.
If the LED is often amber or red, you should consider upgrading your hardware.

Disk load The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs.
If the LED is often amber or red, you should consider upgrading your hardware.

Server delay

The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs.
If the LED is often amber or red, you should consider upgrading your hardware.

Server Monitor - Deliveries tab



Messages sent

The total messages sent by all users since last refresh (Incremental), since last Reset, and since startup.

Message recipients

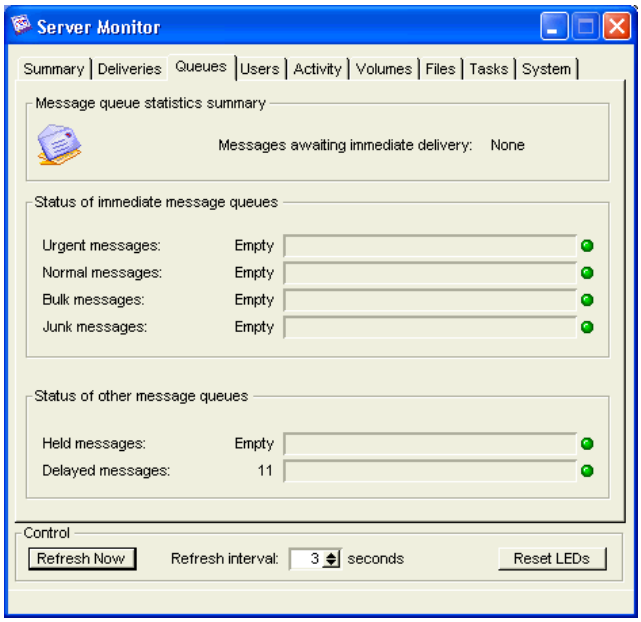
The total messages received by all users since last refresh (Incremental), since last Reset, and since startup.

Confirmed message deliveries

The total number of receipt notifications received.

Messages processed per second	The total number of messages processed per second since last refresh (Incremental), since last Reset, and since startup.
Message deliveries per second	The total number of messages delivered per second since last refresh (Incremental), since last Reset, and since startup.
New messages read per minute	The total number of new messages read by all users per minute since last refresh (Incremental), since last Reset, and since startup.
Last reset:	Click Reset to return all values in the Since Reset column to 0.

Server Monitor - Queues tab



Message queue statistics summary	The total number of messages queued for immediate delivery.

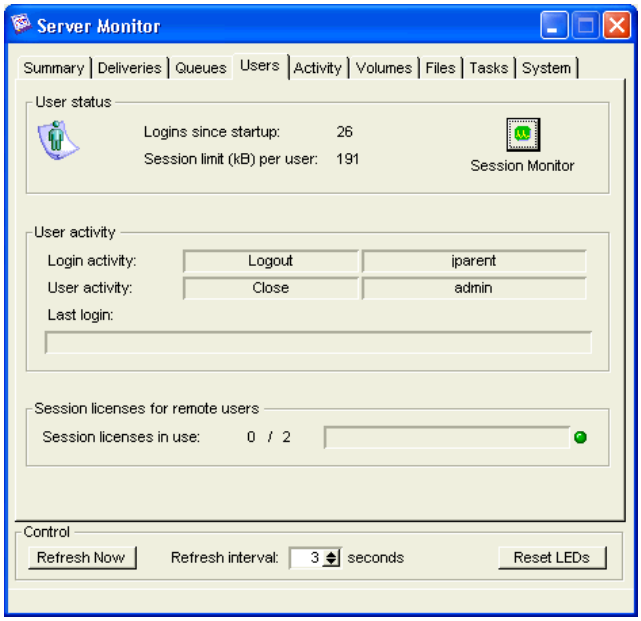
Status of immediate message queues

The current status of the various message queues. The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs.
The capacity of your message queues depends on the amount of memory you have. If the LED is often amber or red, you should consider increasing the amount of memory on your system.

Status of other message queues

Some messages to other email systems and the Internet may not be reachable immediately. The message is queued for a later delivery attempt. As well, messages to other sites that depend on a gateway connection will be queued until the gateway connects at its scheduled time. The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs.
The capacity of your message queues depends on the amount of memory you have. If the LED is often amber or red, you should consider increasing the amount of memory on your system.

Server Monitor - Users tab

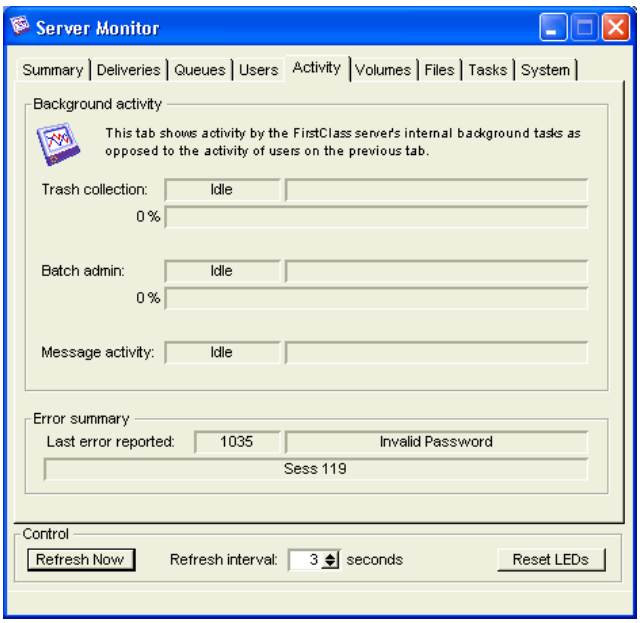


Logins since startup	The number of logins on your system since the server was last started.
Session limit (kB) per user	The session memory limit in kilobytes per user.
Session Monitor	Click to see the Session Monitor. For more information, see “Checking the Session Monitor” on page 199.
User activity	Information on the most recent login.

Session Licenses for Remote Users

The total number of session licenses in use (remote users currently logged in) vs. the total number of session licenses configured. The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs.
If the LED is often amber or red, you should consider purchasing additional session licenses, or changing the most active Remote users to Regular users.

Server Monitor - Activity tab



Trash collection

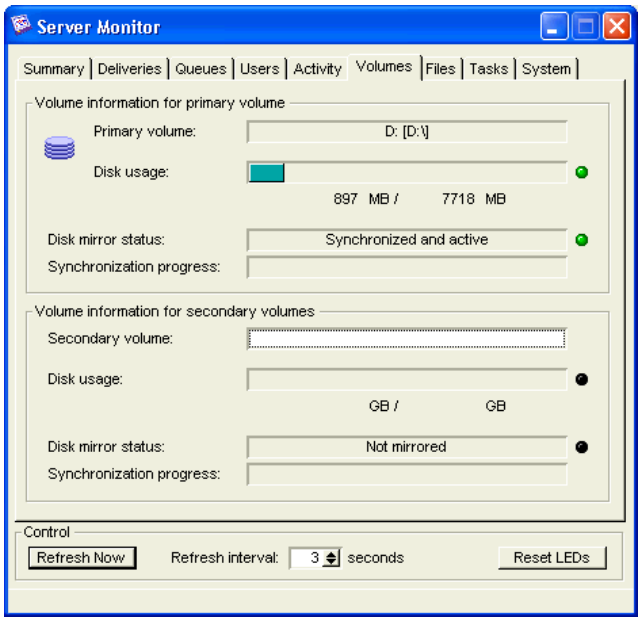
If trash collection is not currently running, the status will be Idle.
If trash collection is currently running, the details will be displayed. The status bar represents the percentage of completion.

Batch admin — If batch admin is not currently running, the status will be Idle.
If batch admin is currently running, the details will be displayed. The status bar represents the percentage of completion.

Message activity — If a message is in the process of being delivered (sent/unsent) the activity will be displayed here.
If trash collection or batch administration is running, it will be displayed here.

Error summary — Information on the last error reported by the FirstClass server.

Server Monitor - Volumes tab



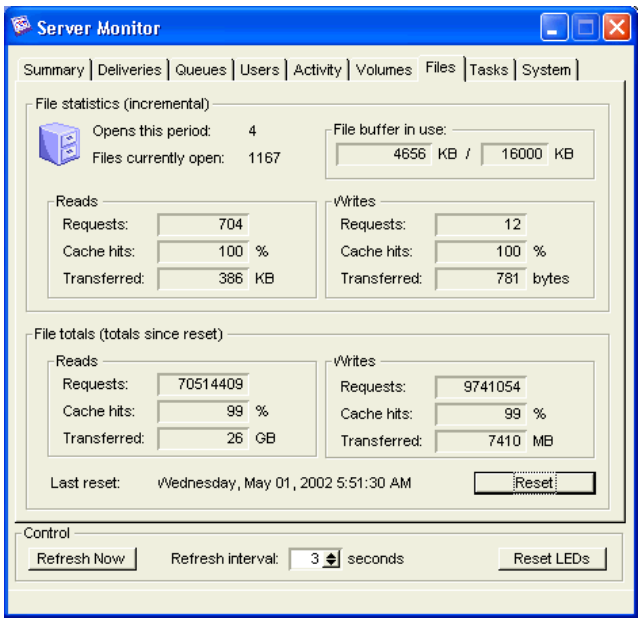
Primary volume — The name or location of your primary volume.

Disk usage	The amount of used disk space on your primary volume vs. the total available space. The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs. If the LED is often amber or red, you should consider increasing the amount of disk space on the primary volume, using multiple volumes, or decreasing the disk usage limit, or expiry limits of users. If the disk usage increase occurs suddenly, use the Disk Usage Report, located in the Stats.Dir folder within the FCPO folder (Windows) or FirstClass Post Office folder (Mac OS), to isolate the user with the high disk usage.
Disk mirror status	The current status of the disk mirror. The LED is green for an active synchronized mirror, amber when mirroring is paused, reconnected or continuing, red if it is inactive or failed, and black if there is no mirroring configured.
Synchronization progress	The status bar indicates the synchronization status. When it is full, synchronization is complete.
Secondary volume	The name or location of your secondary volume (if applicable).
Disk usage	The amount of used disk space on your secondary volume vs. the total available space. The LED is green in normal use, amber when load reaches 90% of capacity, and red when 100% is reached. The LED will stay at the highest color reached until you click Reset LEDs. If the LED is often amber or red, you should consider how your volumes are configured, or increasing the amount of disk space on this volume.

Disk mirror status The current status of the disk mirror. The LED is green for an active synchronized mirror, amber when mirroring is paused, reconnected or continuing, red if it is inactive or failed, and black if there is no mirroring configured.

Synchronization progress The status bar indicates the synchronization status. When it is full, synchronization is complete.

Server Monitor - Files tab



Opens this period The number of files opened since the last refresh.

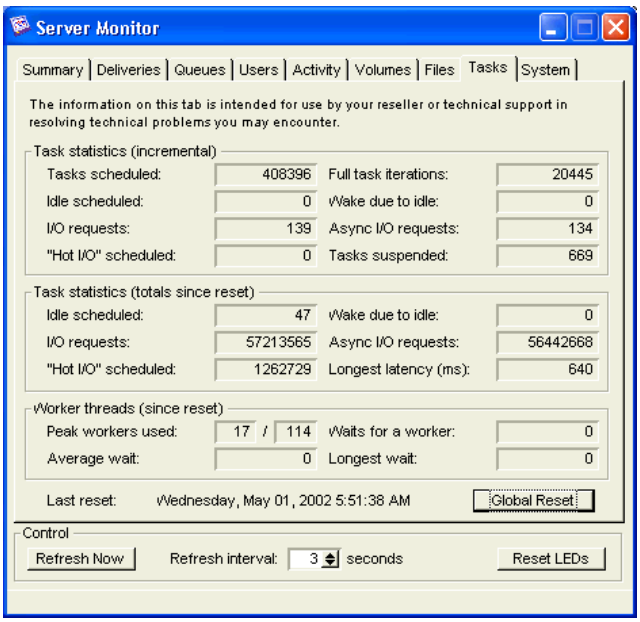
Files Currently open The number of files currently in use.

File buffer in use The amount of file buffer space currently in use and the total available.

Reads The number of file reads since the last refresh.

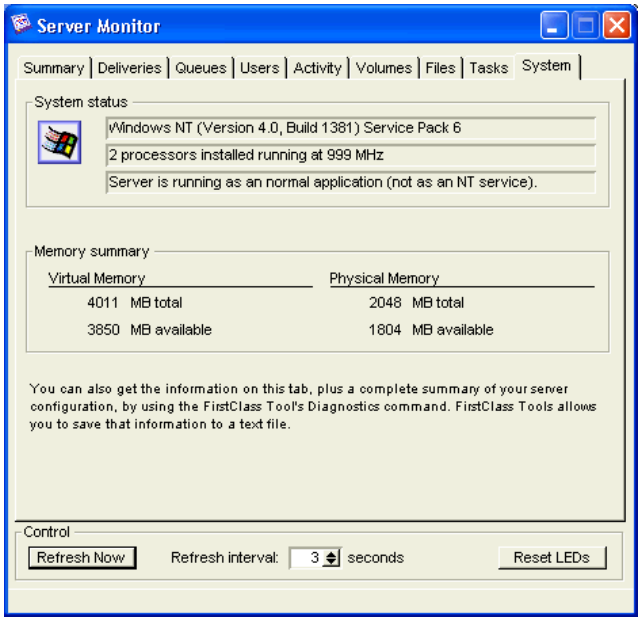
Writes	The number of writes to files since the last refresh.
File totals	Totals of reads and writes since the last reset, or the last time the server was restarted.
Reset	Click to reset the data in the File totals fields.

Server Monitor - Tasks tab



If required, your reseller or Centrinity's customer support team may ask for information contained on this tab during troubleshooting.

Server Monitor - System tab



System status Information about the operating system and installed processors.

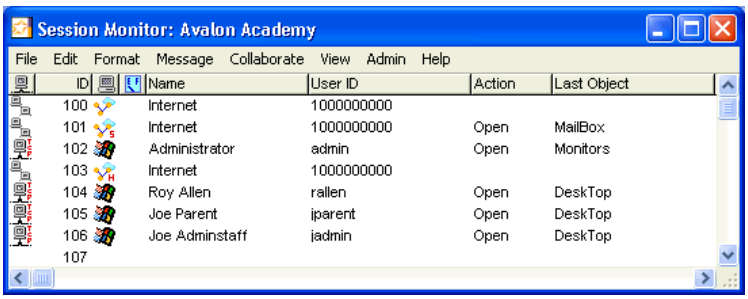
Memory summary The amount of virtual and physical memory available.

Checking the Session Monitor

The Session Monitor is a real-time online display showing the names and activities of logged-in users. To start the Session Monitor, choose Admin > Session Monitor, or double-click Monitors and then Session Monitor.

The Session Monitor displays a row for each active session.

Session Monitor



Connection Protocol	An icon indicates the connection protocol used to connect to the FirstClass server.
ID	The session ID. For information, see *FirstClass Tools Reference*.
Connection type	An icon indicates the type of connection. Note that all Internet connections have a single icon with characters indicating different protocols. For more information, see the Connection type icons table.
Empty/Full	Indicates whether the user is approaching his daily connection limit or the inactivity limit. For information, see Daily connection limit in our online help.
Name	The user's name.
User ID	The user's user ID.
Action	The action the user is currently performing. If the field is blank, the user has performed no action in the last minute.
Last Object	The last object the user has used.
Open Objects	All objects the user has open.

Connection type icons

Mac OS	Windows
Gateway	Voice Services


Internet Services


Java


HTTP


LDAP


NNTP


FTP


Finger


IMAP4


SMTP

Daily log files

FirstClass creates a log file of the console activities for each day that the server is active. These files can be helpful in troubleshooting an ongoing problem. Log files can be viewed while logged into FirstClass, or by using a text editor if you are not logged in.

Log files are named *yymmmdd* (the date the log file was created). In Windows, the extension .txt is added. In Mac OS, there is no extension. These files are stored in the logfiles folder within the FCPO folder (Windows) or FirstClass Post Office folder (Mac OS).

For more information about log files and how to view them, see our online help.

Server statistics files

The server statistics file is a summary of all server events that have occurred since the server was first installed. This file is updated after each trash collection. You can view statistics files using FirstClass or a text editor. You can also import them into a spreadsheet or database program for processing.

The server statistics file is presented in standard, comma-delimited format, and contains the following information:

- Remote user statistics
- Network user statistics
- CLUI user statistics
- Server statistics

Viewing a server statistics file using FirstClass

Server statistics files are named Stats.txt and are in the STATS.DIR folder within the FCPO folder (Windows) or FirstClass Post Office folder (Mac OS).

For information on how to view the file from within FirstClass, or using a text editor, see our online help.

Note We suggest you view a copy instead of the original, because problems could occur if the application you use to view the report acts in an irregular manner and the server is running while you view the file in its original location.

Resetting and deleting server statistics

To reset server statistics, make a backup copy and then delete the original server statistics file.

You should delete statistics files regularly to maintain disk space availability. We suggest you back up these files before deleting them in case you need them later to troubleshoot an ongoing problem.

Warning Do not delete a statistics file unless you wish to reset the server statistics counters.

User statistics files

FirstClass lets you collect daily server and Internet statistics on selected user activities. This can help you see how users are using their FirstClass environment and may also help when troubleshooting an ongoing system problem.

For information about the types of statistics you can track, how to specify which statistics you want to track and how to view user statistics files, see our online help.

Disk use statistics

When FirstClass performs a trash collection, it produces a Disk Usage report. This report records how much hard disk space is used by each of your users.

Disk Usage reports are named DiskUse.txt and are in the Stats.Dir folder within the FCPO folder (Windows) or FirstClass Post Office folder (Mac OS). You can view statistics files using FirstClass or a text editor. You can also import them into a spreadsheet or database program for processing. The report contains a single-line entry for each user with the following information:

- User ID
- Volume
- Total Space
- Total Files
- Referenced Space
- Referenced Files
- Privileges.

For information about viewing disk usage reports, see our online help.

Releasing disk space

In your System Profile, you configured the minimum free disk space required on each volume on your server. When the amount of free disk space on a volume is less than or equal to this amount, the server refuses to accept messages from users or gateways on that volume.

There are several ways you can free up space:

- Use the Disk Usage report to identify users who are using excessive space. Ask these users to clean out their Mailboxes.

Note Users should unsend messages with large attachments and delete the attachments before deleting the messages.

- Set disk usage quotas.
- Look for and delete files with large attachments.
- Make sure all aliases of a deleted item are also deleted. The space an item takes up is recovered only when all copies are deleted. Deleting a large file recovers no space unless the alias is also deleted from the sender's Mailbox (and from the Mailboxes of all other recipients).

  Open the user's Mailbox, unsend the message, delete the attachment, and then delete the message.
- Decrease the expiry period on the System Profile form, Group Privileges form, or on the Permissions forms of your busiest conferences.
- Delete old statistics files (see "Server statistics files" on page 201 and "User statistics files" on page 202) and log files (see "Daily log files" on page 201). Remember to back up these files before you delete them, in case you need to troubleshoot a recurring problem.

To recover freed disk space, trash collection must be run after files are deleted. You can force a trash collection immediately, or wait until the next scheduled trash collection takes place.

Trash collection

Trash collection performs the following important functions in your FirstClass server:

- removing deleted items,
- removing expired items,
- deleting expired user accounts,
- performing automatic updates and repairs to your FirstClass server.

The amount of time trash collection takes to run depends on the size and complexity of your post office. It can range from hours for a large post office to a few minutes for a small one. To find out how long trash collection takes on your FirstClass system, check the server log files. For information about daily log files, see "Daily log files" on page 201 and our online help.

By default, FirstClass is set to perform automatic trash collection once a day (see "Automatic trash collection" on page 207). If required, you can also force trash collection to run immediately (see "Manual trash collection" on page 208).

Removing deleted items

The FirstClass server stores only a single copy of each message. For example, if you send a message to six different users, FirstClass saves only one copy of the file containing the message on the server and places a link to that file in each recipient's Mailbox. When a recipient opens the link from his Mailbox or a conference, FirstClass opens the original file on the server. This method helps reduce disk space requirements when large messages are sent to multiple recipients.

When a recipient or the sender deletes the message from his Mailbox, the actual file is not deleted, only that user's link to the message is deleted. A file can only be deleted when there are no more links to that file. For example, the file for a message sent to six people is deleted only after the sender and all six recipients have deleted it.

Undelete

The undelete command allows users to recover files they have deleted. However, these files cannot be recovered once trash collection has occurred. You should inform users of this and of the time at which trash collection regularly occurs. You might also want to give users the opportunity to undelete items before performing a manual trash collection.

Removing expired items

Trash collection also deletes expired files. Every item in your system has an expiry date – a date after which it will automatically be deleted from the server. When trash collection finds a file (or a link) whose expiry date has passed, it deletes the item. The expiry date is calculated by adding the expiry period to the date that the item was last edited.

You, as administrator, can set an expiry period for private mail and conference items in the System Profile. You can also set specific expiry periods for the entire contents of a conference. For information about setting conference content expiry periods, see our online help.

Users can edit the expiry period for individual messages in their Mailbox using File > Get Info (Mac OS) or File > Properties (Windows). You can also grant users the Set Expiry privilege (see our online help), allowing them to set expiry periods for messages they send. These expiry periods override all previous settings.

Use expiry periods to avoid disk space shortages. The length of the expiry period should be based on the amount of disk space available on your server machine. If you have ample disk space and low traffic, consider a long expiry period (such as several

years). If you are short of disk space, use a short expiry period (such as 30 days).

Trash collection automatically deletes expired items, even if they have not been read by all recipients.

Removing expired user accounts

You can configure trash collection to delete inactive user accounts. In the System Profile, specify the maximum period for which user accounts can be inactive. For more information, see our online help. User accounts inactive for this length of time or longer are automatically deleted from your Directory, along with the contents of their Mailboxes.

FirstClass server updates and repairs

When trash collection runs, a number of log files and statistics reports are generated about the activity on your system and how your system is processing data. These log files and statistics reports are an essential tool in troubleshooting system errors. For information about these files, see Chapter 18, “Monitoring your system”, and our online help.

In addition, trash collection makes general system repairs to your FirstClass server.

Automatic trash collection

FirstClass can deliver messages during trash collection. However, the trash collection task may slow down your server. Trash collection cannot be performed on items in use. For these reasons, you should schedule automatic trash collection for a time of day when there are usually few users online. By default, trash collection runs daily at 3:00 AM. Change the scheduled time on the System Profile.

Note Since trash collection performs repairs to your system, never disable this function or stop it from running once it has started.

Manual trash collection

If you run out of disk space, you must delete unnecessary files, ensuring that all aliases pointing to a particular message are also deleted. (Remember, the file for a message sent to six people is deleted only when the sender and all six recipients have deleted it.) The disk space released as a result of these deletions, however, is not available immediately. To make it available, you must force a trash collection.

To force a trash collection, choose Admin > Control > Trash Collection.

We suggest that you disable all logins before starting a manual trash collection (choose Admin > System Profile, and select Disable all logins on the Server tab) because sessions on slow servers might experience communication link failures and be dropped. Since server performance is decreased during trash collection, you should only force a manual trash collection when necessary; usually, it's better to wait for automatic trash collection.

Backing up your server

Knowing how to back up, rebuild, and restore your FirstClass server in case of emergency are three of your most important responsibilities as an administrator.

In this chapter we discuss:

- why backups are essential
- backing up your server and post office
- configuring automated backups
- using post office mirroring to simplify server backups.

The next chapter discusses restoring your post office from a backup.

20

Why you should always be prepared

Since FirstClass is easy to administer and dependable, emergencies are rare, but should an emergency arise, you must be prepared to deal with it.

Accidents happen. A power failure or a computer malfunction could destroy everything on your FirstClass server. Without a backup, your users could lose important messages and files, and you could be faced with having to reinstall, reconfigure, and recreate your entire FirstClass system.

To avoid this complicated task, we recommend that you back up your system regularly. It's also wise to back up your server before upgrading your FirstClass software or your computer hardware.

Why should you perform backups?

There are several instances in which you may require recent backups, making it imperative that you backup your system regularly:

- security

  The most common reason to do a backup is to guard against natural disasters, system malfunction, or software bugs. For example, if you have a hard disk crash and you have not backed up your FirstClass server to another medium, all of the information in your system will be lost. This is also true if there is a disaster at your server site. Fires, floods, electrical storms, and accidents can all cause partial or total destruction of your system. Finally, bugs in both application and system software may cause malfunctions that render your system unusable. In all cases, planning ahead and backing up ensures that you will be able to get your system running again as soon as possible.

- hardware or software upgrades

  If you are upgrading software (FirstClass or other system software), changing CPUs, or adding hardware, you should do a complete backup first in case there are any problems during the upgrade.

- major FirstClass system changes

  Before making significant changes to your FirstClass system, such as adding many users or a gateway, or running a large or complex batch administration script, ensure you backup your system completely and have the backup on hand. If you make an error in the process that is difficult to undo, you can restore your system to what it was before the error and restart the process.

Choosing a backup schedule

Your backup schedule depends on the value of your data, the likelihood that data will be lost, and the difficulty of doing a backup. For example, let's look at the backup schedule of Avalon Academy. The school's administrator has decided that they cannot afford to lose more than one day's worth of FirstClass data. It has set up the following backup process:

- The FirstClass system is backed up to tape every night.

- Backups are retained for two weeks.
- Every Monday morning, the Sunday night backup is sent to an off-site storage facility.
- All other backups produced during the two-week period are stored in a fire-proof safe on site.

Choosing a backup medium

We recommend that you store your backup on a different medium from the one containing your FirstClass system (such as a DAT tape). If you store your backup on the same drive as your system, and the drive is damaged, neither the FirstClass system nor the backup will be available.

Backing up your server

Once you have installed and configured your server, you should back up the FCPO and FCServer folders (Windows) or the FirstClass post office and FirstClass Server folders (Mac OS). For more information about the FirstClass system files and folders, see "The FCServer/FirstClass Server folder" on page 34.

If you have approved additional volumes, you should also back up the FirstClass post office or FCPO folder on each of those volumes. For more information about multi-volume post offices, see Chapter 17, "Working with multiple volumes". Mirroring only needs to be paused while backing up the mirrored post office and should be resumed when the backup is complete.

Warning Never back up an active server. If you are backing up the server, shut the server down first.

You should schedule regular backups to ensure that you do not lose data due to hardware malfunctions or other problems.

Backing up your post office

When you back up your post office, you make a copy of all the FirstClass data that it contains. This includes messages, the Directory, and the system configuration.

You should set a regular backup schedule and store your backup in a safe place (ideally off-site). You can use any third-party backup utility, such as Retrospect (Macintosh), or the NT Backup application (Windows) to back up your FirstClass server.

Make sure you back up the following folders:

- the folder containing the FirstClass post office on the master volume (the volume on which you installed the FirstClass server)
- the folder containing the FirstClass post office on any other approved volumes
- any additional files or folders you may have modified, such as the Inetsvcs.fc file and the CONFIG or CGI-BIN folders.

Warning Back up all your volumes at the same time. If you don't, some of them might be inconsistent and therefore unusable when you restore them.

Warning Never back up an active post office. Back up a paused mirror volume, or shut down the server before performing the backup.

Automated backup

You can automate the backup process using a combination of the mirroring feature, backup software, scripting software, and the appropriate commands based on your operating system and whether you are running the server as a Windows NT service. For information about mirroring, see "Mirroring your FirstClass post office" on page 213 and our online help.

Automated backup on Windows

You can use the FCUtil utility to automate backups whether you are running as a Windows service or not. The commands needed would be FCUTIL PAUSE and FCUTIL CONTINUE. The FCUtil utility is installed in the same folder as the server executable. FCUtil supports other commands, allowing you to automate a variety of features. You can get a complete list of commands and syntax by opening a command prompt, changing the path to the path of your executable folder, and entering FCUTIL.

Automated backup on Mac OS

You can use the AppleScript utility to create a script to control mirroring and automate your backup process. Select the server application with your script editor to get a list and description of available commands.

Mirroring your FirstClass post office

To simplify your backup procedures and allow you to keep your server running during backups, you can mirror your post office contents to the volume of your choice, pause the mirror, then back up the mirror contents while your server continues to run normally. The FirstClass server maintains a synchronized system by continuously building a list of files to copy on the main volume(s) and copying them to the volume designated to hold the mirrored content. Your server continuously mirrors information until you pause the mirror to perform your backup.

If you are running FirstClass as a Windows service, you can use the PAUSE and CONTINUE commands to perform the pause and continue functions:

- to pause mirroring, issue the command NET PAUSE FCS
- to resume mirroring, issue the command NET CONTINUE FCS.

For more information on running FirstClass as a Windows service, see “Running your FirstClass server as a Windows service” on page 53.

What is mirrored

All the folders in your post office folder are mirrored with the following exceptions:

- FCPO\SERVER\DBEXT (Windows) or FirstClass post office:Server:DBEXT (Mac OS)
- FCPO\FCAS (Windows only)
- FCPO\FCRAD (Windows only)
- FCPO\NOMIRROR (Windows) or FirstClass post office:NOMIRROR (Mac OS)
- LogFiles folder

- Stats.Dir folder
- Internet Services files, such as en.fc and mimetype, which you may have modified.

For more information about mirroring see our online help.

Restoring your post office

You should do backups as a matter of course, using the schedule and media you chose in the preceding chapter. Backups are of little value, however, unless you know how to use them in case of emergency.

If a problem with your post office occurs, you can do several things, in the order listed below, to detect and solve the problem.

1. If there is a reason to do so, rebuild the Directory using the standard rebuild procedure. For information on rebuilding your Directory, see *FirstClass Tools Reference*.

   Warning Never attempt a rebuild without first contacting your reseller or Centrinity Customer Support. Failure to do so can cause irrepairable damage to your post office.

2. If the standard rebuild is unsuccessful, rebuild the Directory using the advanced rebuild options. For information on advanced rebuild options, see *FirstClass Tools Reference*.

   Warning Never attempt a rebuild without first contacting your reseller or Centrinity Customer Support. Failure to do so can cause irrepairable damage to your post office.

3. If all rebuilds are unsuccessful, you will need to restore your post office from a backup.

Rebuilds (suggestions 1 and 2) can be performed without using your backup, but if you need to do a restore (suggestion 3), you'll be glad you have it.

Warning Never use the File > Restore Old User Directory menu command to restore your post office from a backup. This is used only in conjunction with a rebuild attempt.

A restore recreates an image of your post office as it was when it was last backed up. Any changes made to your post office since then will be lost. Therefore you should only do a restore when absolutely necessary. This becomes a larger issue the older your backup is.

When to perform a restore

There are several situations in which you should restore your post office from a backup:

- if you try to rebuild your Directory, first using the regular, and then the alternate index, and both rebuilds fail (which means that both indices are damaged)
- if the hard drive has failed

  If you use a Mac OS, try using a disk utility like the Norton Disk Doctor for Macintosh (also known as Symantec Utilities for Macintosh), or Alsoft's Disk Warrior for Macintosh.

  If you use Windows, try using a disk utility like Norton Disk Doctor or Dr. Watson.
- if you are moving your post office to a new drive.

Performing a restore from a backup

To restore your post office from a backup, follow these steps.

1. Make sure the server is shut down.
2. Copy the following folders from your backup medium to your hard drive, replacing the existing damaged versions:
   - the folder containing the FirstClass server
   - the folder containing the FirstClass post office on the master volume (the volume on which you installed the FirstClass server)

- the folder containing the FirstClass post office on any other volumes you have approved.

3. Although not required, it's a good idea to rebuild your Directory after restoring your post office. Follow the procedure in *FirstClass Tools Reference*. Be very sure you do not select any options at the bottom of the form.

Warning Never attempt a rebuild without first contacting your reseller or Centrinity Customer Support. Failure to do so can cause irrepairable damage to your post office.

Selectively restoring objects in your post office

You can selectively restore objects in your post office for your users. This selective restore feature allows you to use the Export batch admin command to restore selective items, such as mail, documents, conferences, folders, and so on, which have been deleted from your system by trash collection. This feature should be used sparingly and only in emergency situations, as it takes a great deal of time and resources.

Warning Before beginning a partial restore, ensure your entire post office is backed up to another machine.

Once the backup is complete, issue a batch admin export command to the administrator to individually move items from the backup to your original post office. The batch admin command must contain a batch admin script identifying exactly what you want to restore and how you want to restore it. For details on using the Export batch administration command, batch administration syntax, and detailed batch admin commands and scripts, see our online help.

Performing a Selective Restore

In FirstClass 6, through batch admin, you can do a selective restore of entire container objects (conferences, folders, calendars, etc.) and individual items (Address Book entries, messages, documents and so on) but not user accounts. Versions earlier than 6.0 require a full FCPO restore to perform any recovery.

Note The batch administration section of our online help contains important information about this feature. Ensure you have read and understand the information in our online help before attempting a selective restore.

When doing a selective restore, you have two options:

Option 1

Warning Do not perform these steps on the same drive where your live post office is installed.

1. Shut down your server and Internet Services.
2. Copy your FCPO backup to another hard drive and, if the FCPO folder is named differently, rename it to FCPO.
3. Map your restored FCPO to a FirstClass server.

   Reinstall the server from your CD in the same location as the restored FCPO.

Go to step 4.

Option 2

1. Shut down your server and Internet Services.
2. Rename your live FCPO folder.
3. Copy your FCPO backup to the same location as your server and, if the FCPO folder is named differently, rename it to FCPO.

Go to step 4.

For both options

4. In the restored FCPO, search for the container or item to restore. If you already know the names of the items you want to restore, skip this step.

   Note If you are restoring an entire container, for example a Mailbox or Application Server folder, the container with the same name must already exist on your Desktop. We recommend that you create a temporary container for your restored information and then drag items from this container to where

you want them to reside. This avoids the problem of overwriting or creating duplicates of existing items.

5. In the restored FCPO, start the server, log in as administrator and send the following Export command to batch admin:

   export desktop <userid> "item" +r

   where:
   <userid> is the user ID of the user for whom you are restoring data,

   "item" is the container or individual item you wish to restore,

   Note If your item has a space in the name, you must use quotes (" ") around the item name. Item names are not case sensitive.

   +r (recursive) means to restore all items (do not use this variable to restore individual items).

   Note If you don't use desktop and <userid> in the script, the server considers administrator the default user.

   The remaining steps will be done on your live FCPO. Disable the restored FCPO and rename your live post office back to FCPO.

6. Copy and paste the batch admin script into a message on your live server or forward the batch admin message to your live server.

7. Replace <objdesc> (angle brackets included) in the batch admin script with the path to the correct location, and send the message.

8. Check that the items were restored.

Example 1

Roy Allen has deleted an important email (Financial Report) from his Mailbox. Following the steps described above, Avalon Academy's administrator was able to restore Roy's individual item to his Mailbox. Using the same syntax as in Step 5, the administrator sent this batch admin script to export to batch

admin the email item 'Financial Report' located in the user's Mailbox:

```
export desktop rallen "Mailbox:Financial Report"
```

The administrator received the export script from batch admin. Next, working in the live server, the administrator copied and pasted the batch admin script into a message and changed the <objdesc> line to:

```
SetBase desktop rallen mailbox
```

to point the batch admin email to the correct path on Roy Allen's Desktop and restore the email item 'Financial Report' to his Mailbox. The administrator sent the message to batch admin and Roy now has his important email back in his Mailbox.

Example 2

Amanda Clark, another Avalon Academy employee, is leaving the school. She wants to export all of the contacts in her Address Book to Roy Allen, as he is taking over her responsibilities. Following the steps described above, Husky's administrator was able to export to batch admin Amanda's entire Address Book and send it to Roy. Using the same syntax as in Step 5, the administrator sent this batch admin script to export to batch admin Amanda Clark's Address Book, located on her Desktop:

```
export desktop aclark "Address Book" +r
```

The administrator received the export script from batch admin. Next, working in the live server, the administrator copied and pasted the batch admin script into a message and changed the <objdesc> line to:

```
SetBase desktop rallen "Address Book2"
```

to point the batch admin email to the correct path on Roy Allen's Desktop where Amanda's Address Book will be copied. Then the administrator sent the message to batch admin. Remember, Roy Allan must have a container called "Address Book2" already created on his Desktop before running the batch script.

Roy now has a complete copy of Amanda Clark's Address Book and all of the contents that reside within it. Notice that the temporary container is a different name from the original

container. This is so Roy's original Address Book will not be affected in any way. Roy can now pull contacts from the temporary container and place them in his resident Address Book at his leisure.

Index

D

E

F

G

H

I

L

M

N

O

P

R

S

T

U

V

W

Z