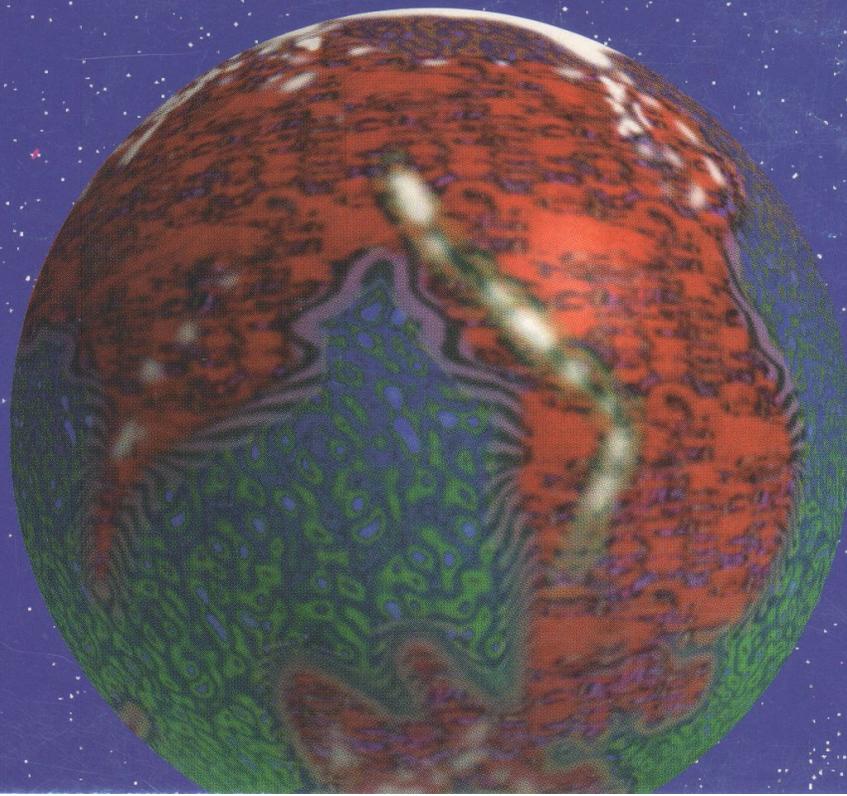
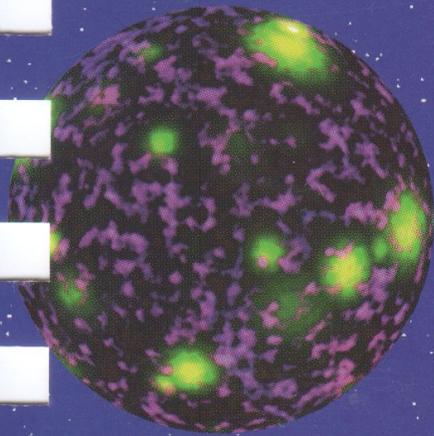


NOVASERVER

INFORMATION SERVER SOFTWARE



NovaServer 4.0

System Operator Guide

Information Server Software for the Apple Macintosh®

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TABLE OF CONTENTS

.....

Foreword	Introducing NovaServer 4.0	1
	Welcome to NovaServer!.....	1
	Not Just A Bulletin Board	1
	NovaServer Features	3
	<i>Communications Features • Networking and Internet Connectivity • Graphic and Text User Interface • Easy Configuration and Customization • Automated Maintenance</i>	
	The Virtual NovaServer	5
	NovaServer's HyperText Fabric.....	6
	The Many Faces of NovaServer.....	7
	<i>NovaServer as a Community Bulletin Board • NovaServer as a Regional Online Service • NovaServer in the Corporate Environment • NovaServer in Education • NovaServer on the Internet</i>	
	Optional Features	9
	Welcome to the New Universe.....	11

GETTING STARTED

Chapter I	Recommended Hardware and Software.....	15
	Memory (RAM)	15
	Hard Drive	16
	Backup Devices.....	17
	Networking	17
	Internet Hardware.....	18
	<i>SLIP/PPP • ISDN • Dedicated lines</i>	
	Modems	20
	Serial Ports.....	20
	System Software	21

Chapter 2	Installing NovaServer	23
	Installing the Server Application Software	23
	Installing Your Key File	28
	Adjusting Memory Allocation.....	29

Chapter 3	Basic Server Operations	33
	Starting NovaServer	33
	Quitting NovaServer	34
	Configuring Nodes	34
	Setting Your Server Options	37
	Creating Initial Accounts	38
	<i>Editing the Sysop account • Additional accounts • PostMaster, Root, and Sysadmin</i>	
	The Status Window	44

CUSTOMIZING YOUR SERVER

Chapter 4	Creating Your Server's Menu Structure	49
	Menu Editor Basics	49
	Editing Your Server's Menus	51
	<i>The Toolkit palette • Adding components • Editing existing components • Moving components from one menu to another • Deleting components • Rearranging the order of components in a menu • Closing the menu editor</i>	
	Creating a Logical Menu Structure	54
	The Settings Window	55
	<i>Name • Key • Access Level • Access Group • Hide in NovaView</i>	
	Menu	57
	<i>Automatic Menu Script • Script</i>	
	File Library	58
	<i>Name • Download Level • Upload Level • Moderator Group • Personal Library • Read-Only • Self-Maintaining • Audit Uploads & Downloads • Ignore Download Limits • Downloader must average... • Uploading disabled after... • Folder • Network • Picture Previews</i>	
	Message Forum	62
	<i>Name • Read Level • Write Level • Moderator Group • Purge After • List New First • Send Post Bulletins • All Posts Anonymous • Use Real Names • Folder • Network</i>	

External	65
<i>File</i>	
Vote	65
<i>Vote Question • Responses</i>	
Send Mail	66
Read Mail	66
Send Feedback	67
<i>Send To</i>	
Send Document	68
Send Doc Feedback	68
<i>Send To</i>	
List Users	69
Chat Request	69
Node Chat	69
Conference	70
Jump	70
<i>Destination</i>	
Disconnect	71
Run Script	71
<i>Script Name</i>	
Display File	72
<i>File</i>	
Download File	73
<i>File</i>	
Return	73
<i>Jump to previous menu</i>	
NewScan	74
Subscribe	75
Edit Password	75
Edit Term	75
Get URL	75
<i>Get URL • NovaView Icon</i>	
List Nodes	77
Send Bulletin	77
Edit Batch List	77
Tree	78

Connect Out.....	78
Connect to	
AppleSearch	79
Source	
HTML Gate.....	80
File	
Server Component Mini-Index	81
Chapter 5 NovaScript & Custom Menu Design	83
About NovaTerm	83
The Service File	85
The Menu Script Template.....	85
About Automatic Menu Scripts	88
Menu Script for NovaTerm Callers	89
NovaTerm and HTML	90
Menu Script for RIP Callers	91
Menu Script for TTY Callers	93
Menu Script for VT100 Callers	94
Menu Script for ANSI Callers	96
Customizing Menus by Access Level or Access Group	96
Chapter 6 Enhancing Your Server with NovaScript	101
Adding and Editing Other Scripts	101
Welcoming NovaTerm Callers	103
Welcoming Text-Mode and RIP Callers.....	105
One Logon Script for All Callers	106
Confirming New Accounts	106
New User Survey.....	108
One-Time Bulletins.....	110
<i>Freshening Bulletins • Expiring Bulletins • More powerful welcome scripts</i>	

RUNNING YOUR SERVER

Chapter 7 Managing Your Accounts 115

Account Management Basics115

Account Options.....116

Auto-delete expired accounts • Private board (no new accounts) • Default Web Access • Maximum allowable accounts • Default expire time • Default daily time limit

Access Levels117

New User • Voting • Delete Msgs/Files • Sysop Utilities • NovaTerm Client • Network Mail

Creating User Accounts120

Creating a Guest Account121

Allowing Users to Create Their Own Accounts123

Editing Existing Accounts125

The Account Record Window126

First/Last Name • Handle • Company • Address/City/State/Zip • Phone • Password • Level • Uploads/Downloads • Calls/Posts • Time/day • K DId • Verified • Use NS Notifier • Text Emulation • Web Access • Account License • Account Expires

Deleting Accounts130

Creating and Maintaining Groups131

The List Groups window • The Editing Group window • Scripting Group Maintenance

Chapter 8 Maintaining and Managing Your Server 135

Server Management Basics135

Legal Issues136

Censorship • Privacy • Copyright • Trademarks • Libel • Liability • Pornography • Anarchy or terrorism information • User agreements

Assigning Moderators140

Moderating Message Forums141

Moderating File Libraries142

Managing Other Server Elements144

General Maintenance144

Logs • Maintenance Events • Backups • Virus Checking • Hard Drive Checkup • Desktop Rebuilding • Optimizing and Defragmenting

Securing Your Server151

Keeping Your Server Up152

Chapter 9 Remote Maintenance 155

Remote Maintenance Basics 155

Text mode logons • The Tree server component

Verifying New Users 156

Editing User Accounts 158

Editing Groups 159

Editing Scripts 160

Editing Access Levels 161

Editing Server Options 162

Editing Server Parameters 163

Reading a User's Mail 164

Managing Outgoing Messages 165

Viewing and Clearing Server Logs 166

Working with Files on the Server 167

Editing Menus 168

Editing Forums and Libraries 170

Chapter 10 Running a Virtual Server 173

Virtual Server Basics 173

Setting Up The Account Server 174

Setting Up NovaServer to Use the Account Server 175

Designing a Virtual Server 176

Message Forums and File Libraries 177

HTML Documents and Text Files 178

Electronic Mail and the Home Server 179

Sharing Other Resources 180

NovaScript scripts

Text and RIP Callers 181

NETWORKING

Chapter 11 Networking with InfoLink™ 185

InfoLink Basics185

Setting Up InfoLink Sites186

The List Sites Window189

Editing a Network Site190

Gateway Type • Connection Type • Name • Network Address, Phone Number, or File Name • Modem Init • InfoLink Address • Connect when E-mail is sent • Lock Site • Share Site • Allow Connections • Return Invalid Mail • Request Update • Send Update

Electronic Mail with InfoLink194

Using another site's SMTP gateway

The InfoLink Settings Window196

Setting Up Network Events199

Setting Message Import Priority202

How InfoLink Works203

InfoLink Addresses • Electronic mail routing • Short circuits • Message forums and file libraries

Chapter 12 Networking with the Internet 207

Internet Basics207

Setting Up an Internet Mail Gateway208

Using the Internet Mail Gateway216

Setting Up a Usenet News Gateway216

Using the Usenet News Gateway229

Setting Up Telnet-In Connections229

Setting Up Telnet-Out Connections231

World Wide Web Browsing232

Get URL Components • Hotlinks in Server Documents • NovaScript scripts

Restricting Web Access234

World Wide Web Publishing236

Wide Area Information Servers (WAIS)237

Chapter 13 Networking With Other Gateways	241
Installing and Configuring the QuickMail Gateway	241
<i>File Sharing • Configuring NovaServer • Configuring the QuickMail Server</i>	
Third-Party Gateways.....	244

REFERENCE

Chapter 14 Server Reference	247
The File Menu	247
<i>New Menu • Open Item • Close • Get Info • Usage Log • Server Log • InfoLink Log • Error Log • Quit</i>	
The Edit Menu.....	248
The Terminal Menu.....	248
<i>Node • Logon Local • Disconnect • Chat • Sysop Available</i>	
The Setup Menu.....	250
Nodes	250
Options	252
<i>General • Accounts • Account Usage • Access Levels • ODBC Setup • Gateways • E-Mail • Log Options • Auto-Backup • RIPcrip</i>	
Menus	262
Accounts	263
Groups	263
Scripts.....	264
Events	265
Network Sites.....	267
Lock Setup	267
The Windows Menu	268
<i>Status • Node numbers</i>	

Chapter 15 NovaScript Reference	271
NovaScript Basics	271
Storing Scripts	272
Running Scripts	273
Numbers	274
Constants	275
Variables	276
Expressions	277
Built-In Functions	278
Conditional Execution	279
Loops	281
Calling Other Scripts	284
Calling Externals	285
Account & Group Commands	286
<i>delete account • put user in group • remove user from group</i>	
Session Commands	287
<i>disable aborts • enable aborts • toggle word wrap • disconnect • pause for</i>	
User Interaction Commands	286
<i>display • input string • input text • request return • request verification • print file • print paged text</i>	
Terminal Emulation Commands	287
<i>clear screen • cursor up • cursor down • cursor right • cursor left • print ANSI • black bgcolor • black forecolor • blue bgcolor • blue forecolor • cyan bgcolor • cyan forecolor • green bgcolor • green forecolor • magenta bgcolor • magenta forecolor • red bgcolor • red forecolor • white bgcolor • white forecolor • yellow bgcolor • yellow forecolor</i>	
File Commands	289
<i>download file • upload file • open text file • open user file • send output to • write • insert in log</i>	
NovaTerm Commands	290
<i>size window • draw picture • click rect • click oval • play sound • play movie • request URL</i>	
RIP Commands	292
<i>setup RIP menu • draw RIP icon • RIP click • print RIP</i>	
Other Commands	292
<i>exit • return • run script • launch external • begin auto menus</i>	
NovaScript Command Mini-Index	293
Automatically Executed Scripts	294

Chapter 16 HTML Reference 297

HTML Basics 297

Uniform Resource Locators (URLs) 300

HTML Document Structure 301

Header Tags..... 302

TITLE • BASE • TEMPLATE

Block Structure Tags..... 303

P • BR • PRE • H1...H6 • ADDRESS • BLOCKQUOTE

Idiomatic Phrase Tags..... 304

CITE • SAMP • CODE • KBD • VAR • EM • STRONG

Typographic Tags 305

FONT • B • I • TT • CENTER • RIGHT • HR

List Definition Tags 306

UL • OL • DIR • MENU • LI • DL • DT • DD

HyperText and Media Tags 307

A • IMG • SND • MOVIE

HTML Tag Mini-Index..... 309

Chapter 17 Line Editor Reference..... 311

Line Editor Basics 311

Line Editor Commands 312

Other Editor Commands 314

Chapter 18 Server Directory Structure..... 315

Files 315

Accounts • Design • InfoLink™ • NS Key • Resources

Folders..... 316

NS Externals • NS File Libraries • NS Files • NS Forums • NS Logs • NS Mail • NS Network Mail • NS Surveys • NS Votes • NS Waiting Mail

Chapter 19	MenuMaker Reference	319
	MenuMaker Basics	319
	Graphic File Formats.....	319
	Building a Menu	321
	Converting Sounds	325
Chapter 20	Cable Configuration	327
Appendix	User Agreement.....	329
Glossary	337
Index	355

Chapter 17: Marketing Research
Chapter 18: Sales Management
Chapter 19: Distribution Management
Chapter 20: Customer Relationship Management
Chapter 21: International Marketing
Chapter 22: Entrepreneurship
Chapter 23: Small Business Management
Chapter 24: Social Entrepreneurship
Chapter 25: Business Ethics and Social Responsibility
Chapter 26: Business Law
Chapter 27: Business Finance
Chapter 28: Business Accounting
Chapter 29: Business Statistics
Chapter 30: Business Information Systems
Chapter 31: Business Process Management
Chapter 32: Business Innovation and Creativity
Chapter 33: Business Strategy
Chapter 34: Business Growth and Expansion
Chapter 35: Business Sustainability
Chapter 36: Business Resilience
Chapter 37: Business Transformation
Chapter 38: Business Digitalization
Chapter 39: Business Automation
Chapter 40: Business Analytics
Chapter 41: Business Intelligence
Chapter 42: Business Performance Management
Chapter 43: Business Risk Management
Chapter 44: Business Crisis Management
Chapter 45: Business Recovery Management
Chapter 46: Business Rebranding
Chapter 47: Business Restructuring
Chapter 48: Business Turnaround
Chapter 49: Business Liquidation
Chapter 50: Business Bankruptcy

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INTRODUCING NOVASERVER 4.0

- *In this Foreword, you'll learn about the advanced features that make NovaServer stand out from the crowd.*

WELCOME TO NOVASERVER!

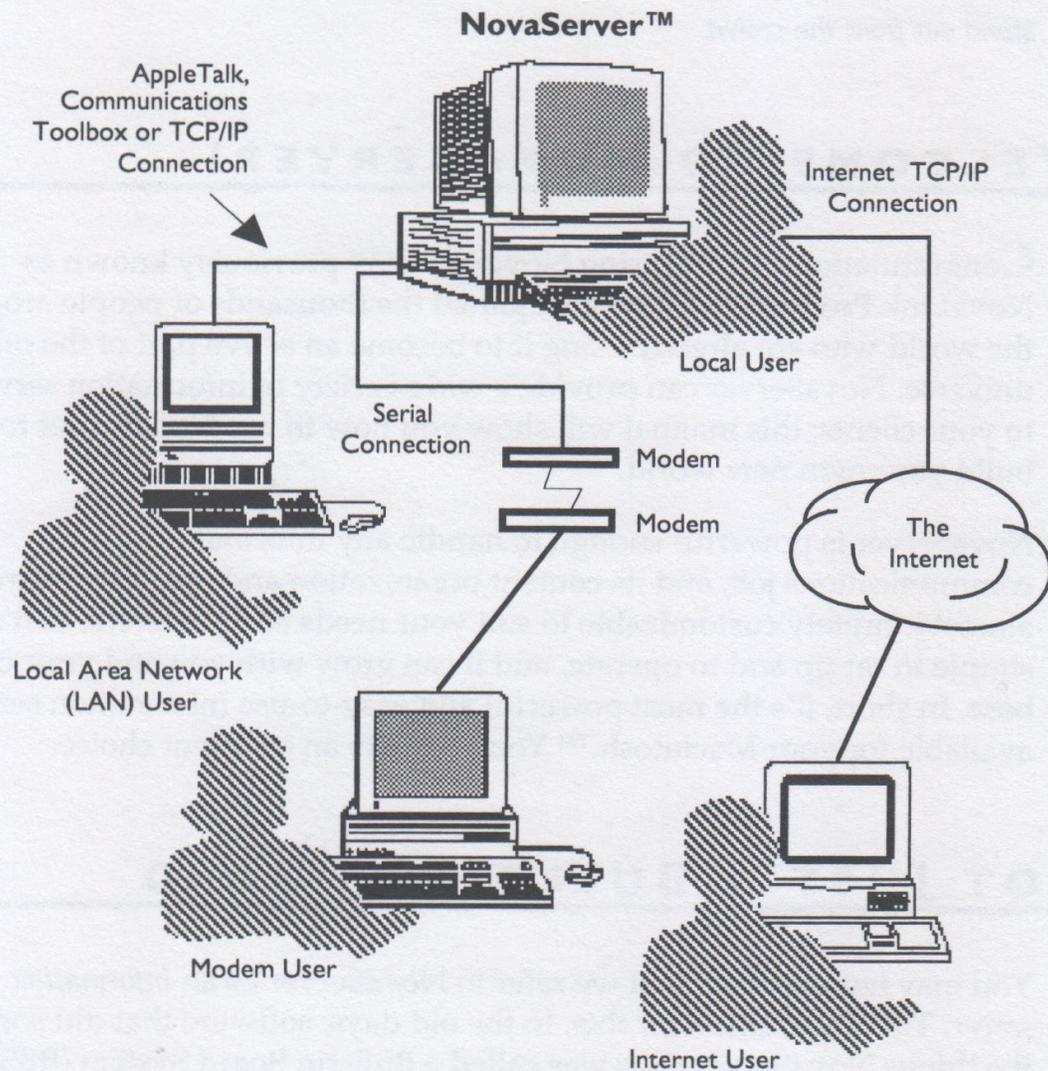
Congratulations! By licensing NovaServer,TM previously known as NovaLink Professional,TM you've joined the thousands of people around the world who are already using it to become an active part of the online universe. NovaServer can provide a wide variety of information services to your clients; this manual will show you how to use NovaServer to build your own new world.

NovaServer is powerful enough to handle any information communications job, and its content organization and user interface are almost infinitely customizable to suit your needs and preferences. It's simple to set up and to operate, and it can grow with you and your client base. In short, it's the most powerful and easy-to-use information server available for your Macintosh.TM You've made an excellent choice.

NOT JUST A BULLETIN BOARD

You may have noticed that we refer to NovaServer as an *information server*. There's a reason for this. In the old days, software that did some of the things NovaServer does was called a Bulletin Board System (BBS), or, sometimes, an Electronic Mail (or Messaging) System (EMS). If that's what you're most familiar with, it's tempting to think of NovaServer in those terms—you certainly can use NovaServer as an electronic mail server, or a BBS, if that's what you want to do. Many NovaServer operators do just that.

But NovaServer is a leap beyond Bulletin Board Systems. Your clients can call your server with a modem, over ordinary phone lines, as they do with a BBS—or they can access it over a local area network (LAN), or even through the Internet. If your clients are using a Macintosh or are running Windows, they can use the free NovaTerm *client software* to access your server, or they can use any computer and any communications software that supports VT100, ANSI, TTY, or RIP graphics. NovaServer provides an easy-to-use text or graphic user interface that's completely customizable—you can use the standard look and feel we provide, or design your own.



Through NovaServer, you can offer your clients not just electronic mail, message forums, and file libraries (standard features that most BBSs offer) but also private and public multi-user conference rooms, searchable databases of documents, and Internet services, including Usenet, Telnet, and World Wide Web browsing—all through a single application program. In fact, NovaServer is the *only* information server currently available that lets you offer all these information services to your clients without requiring them to have an Internet connection themselves.

NOVASERVER FEATURES

NovaServer 4.0 has literally dozens of features that help you share information and communicate more effectively—more, in fact, than any other desktop information server on the market. You'll learn how to use all of these features throughout the manual; this section offers an overview of the power of NovaServer.

Communications Features. NovaServer's *raison d'être* is communication.

That's why NovaServer includes easy-to-use electronic mail for communication between individuals, message forums for communications among members of a group, and file libraries to facilitate the exchange of documents, software, and other electronic files. NovaServer also features Voting Topics for conducting polls and surveys, along with public and private multi-user Conference Rooms where users can chat in real-time.

Networking and Internet Connectivity. NovaServer has a full suite of advanced networking features. InfoLink™ can be used to share information (including electronic mail, message forums, and file libraries) with other NovaServers by modem connection or through the Internet. To help minimize long-distance call costs when connecting with a modem, the InfoLink protocol stores outgoing messages in a delivery queue until a scheduled connection time, then forwards the messages to the remote server. (You have complete control over the frequency and the times of your InfoLink connections.)

NovaServer also can talk to Internet-standard electronic mail (SMTP) and Usenet news (NNTP) servers for direct message exchange with the Internet. An AppleSearch™ gateway lets you set up your own databases of keyword-searchable documents and to connect the users of your server to wide-area information service (WAIS) databases on the Internet. Telnet functionality, both outbound and inbound, allows users of your server to connect from anywhere in the world and to use thousands of text-based services on the Internet. And finally, NovaServer 4.0's integrated World Wide Web support lets the users of your server surf the Web using the NovaTerm client software—without needing a SLIP or PPP connection of their own. No other desktop information server offers more options for networking than NovaServer!

Graphic and Text User Interface. NovaServer supports both graphical and text-based user interfaces, opening the door to all computer users—not just those who have Macintosh computers or who run Windows. While most users will prefer to use NovaTerm, NovaServer embraces alternate access methods—including RIP (Remote Imaging Protocol) graphics, a standard broadly supported by MS-DOS terminal programs, as well as ANSI, VT-100, and TTY emulation.

With simple NovaScript commands, you can customize any of your server's user interfaces independently. You may simply choose to use NovaTerm's default appearance—a clean, attractive windowing user interface based on the Macintosh Finder—but you can also use clickable graphic images of any size, or World Wide Web-style pages written in HTML (the HyperText Markup Language, discussed later in this chapter). One custom user interface works with both the Macintosh and Windows versions of NovaTerm. You can also design custom RIP or ANSI graphics and completely redefine any of the text-based menus.

Easy Configuration and Customization. The drag-and-drop menu editor in NovaServer allows you to build and modify your server quickly, with a minimum of fuss. Adding a completely networked message forum takes less than a minute, and you can design and build a fairly complex server in an afternoon.

Using the built-in customization tools, you can make NovaServer's look and feel distinctively your own. NovaScript, NovaServer's primary scripting system, controls how the server presents text or graphics; it is the basic tool you'll use to create custom text and graphics user interfaces. HTML, the HyperText Mark-up Language, can also be a powerful tool for customizing your server, since you can include *hotlinks* to any part of your server in any document you display. (HTML is such a vital part of the way NovaServer 4.0 works that its implications are covered in considerably more detail later in this Foreword.)

Automated Maintenance. NovaServer takes some of the load of running a server off your shoulders by allowing you to automate networking, account and message expiration, and even backups—leaving you free to concentrate on providing information, not baby-sitting a server. Our customers tell us that NovaServer is one of the easiest-to-maintain systems on the market.

THE VIRTUAL NOVASERVER

As your information service grows, you may find yourself needing to support more simultaneous users, or more accounts, than one computer can comfortably handle. When you reach that point, NovaServer lets you add one or more additional computers and connect them to a central account server over your local area network (LAN). With the account server in place to handle user validation, you can transparently divide your client load across two or more separate computers running NovaServer. You can even keep different resources on different machines—say, file libraries on one computer, message forums on another, electronic mail on a third. Your clients will never need to know which specific server they're accessing, or where the resource they're using is located on your network.

We call such a network of NovaServers a *virtual server*, because it looks like one enormous server to the user, even though it's running on physically separate machines. Until now, you needed complicated (and usually expensive) equipment and software to create such a system. *Only* NovaServer lets you run this kind of virtual server using ordinary desktop computers.

Some of NovaServer's features may sound like the ones commercial online services, such as America Online[®] and CompuServe[®] offer. That's no coincidence. With NovaServer 4.0, you can think big while starting small, and its forward-looking features ensure that your investment won't be made obsolete any time soon. If you want to start your own America Online, NovaServer gives you the tools to do it—but you can get started in an afternoon, without spending millions of dollars.

NOVASERVER'S HYPERTEXT FABRIC

At the heart of NovaServer is a language known as HTML, an abbreviation for *HyperText Mark-up Language*. It's a standard way of formatting (marking up, in publishing parlance) a text file and describing its formatting. HTML documents can include graphics, sound, and animations—and they can also include hotlinks to *other* HTML documents. HTML is the foundation of the World Wide Web, a network of thousands of Internet-connected computers that make HTML documents publicly available. Clicking a hotlink in one document can take you to a document halfway around the world from where you started. If you've ever used a browser like Netscape™ or Mosaic™ you've experienced HTML.

Normally, we would avoid mentioning anything as technical as HTML so close to the beginning of a user manual. After all, HTML can be an intimidating acronym if you've not been initiated in the wonders of the World Wide Web. But there's a reason that we're mentioning this now: the marriage of NovaServer with HTML is the most important improvement we've ever made to the software.

As we designed NovaServer 4.0, it became clear that our server software already had some things in common with the World Wide Web. (Both, in outline, allow clients to access many different kinds of information resources through a graphical user interface, and both use a client-server communications model.) We knew where we wanted to take NovaServer, and it was apparent that World Wide Web technology could help. So we completely redesigned NovaServer to use HTML and other Web standards—both internally, and between the NovaTerm client software and the server—and in so doing, we made NovaServer the first desktop information server to incorporate World Wide Web technology as more than an afterthought.

Every item you add to NovaServer—message forums, file libraries, and so forth—has its own Uniform Resource Locator (URL). (A Uniform Resource Locator is a Web-standard way of stating where a particular resource is located.) HTML documents you store on your server can point to other parts of your server. For the first time, a hotlink in an HTML document can take you not just to another Web page, but to a bulletin board, or a file library, or a searchable database, all without leaving the NovaTerm client software.

Every document on your server can be an HTML document. Every electronic letter; every message forum article; every description in every file library; every text file or help message displayed on your screen. All of these documents can now include graphics, sound, and hotlinks to other resources on your server—and on the Internet. Imagine sending your clients an electronic letter that invites them to visit a new part of your server, or a Web page you found—and including a hotlink that takes them there right in the message. NovaServer makes it possible.

ResNova Software, Inc. is committed to further integrating NovaServer with World Wide Web technology. The Internet support in NovaServer 4.0 already outpaces competing products, and in future versions we'll be extending our lead even further by actually making NovaServer fully accessible on the World Wide Web. Publishing home pages is only the beginning of what we'll offer; in the end, we want to erase the lines that separate BBSs and the World Wide Web.

The best part is that, even though HTML is a standard designed for use on the Internet, you don't need the NovaServer Internet option to start taking advantage of the new HTML infrastructure of NovaServer. You don't need to know anything about HTML, either—although HTML isn't difficult to learn, and learning it is an excellent way to expand the range of things your server can do. You just need to install NovaServer and start using it!

THE MANY FACES OF NOVASERVER

Since NovaServer is an extremely flexible and highly customizable product, it is capable of serving a variety of needs. Consider the following possibilities:

NovaServer as a Community Bulletin Board. NovaServer makes a great community bulletin board, serving as a gathering point for the members of your neighborhood or town. Callers access the system by modem and participate in discussions on issues that are important to them. With the right host (you!), some community bulletin boards can generate satisfyingly stimulating discussions and attract long-distance callers from around the world. Usually, such systems are run for fun, not for profit, although some may charge just enough to cover costs.

NovaServer as a Regional Online Service. Combine the tightly focused scope of a community BBS with the offerings of a major online service, and you have a Regional Online Service. Such services usually cover a particular metropolitan area (often setting up multiple points of presence where necessary to provide local phone numbers for the entire region). They're popular because they have local flavor and local people—and because they usually cost much less than national online services.

There's a fine line between a really big BBS and a regional online service. Usually regional online services are run by a company rather than an individual and a few of his friends; they charge enough money to make a profit, instead of just enough to cover their costs; and they offer Internet access and other services that are difficult to implement without adequate funding. (A high-speed Internet line suitable for 50 simultaneous users can cost \$2000 or more per month.) NovaServer is perfect for this use because of its customizable user interface and its Internet and Virtual Server capabilities, which allow regional online services to offer many of the same features found on national services.

NovaServer in the Corporate Environment. NovaServer has much to offer both large and small businesses. Inside the company, NovaServer provides an easy-to-configure in-house electronic mail system, complete with bulletin boards and libraries for employee discussion, project management, software distribution—whatever you need. NovaServer's built-in InfoLink networking is perfect for businesses with branches scattered around the country; with one short phone call per night dozens of messages can be exchanged with other offices—potentially saving hundreds of dollars previously spent on long-distance calls, faxes, and overnight letters.

Your employees can use the server in the office, or on the road with their laptops, and the SMTP Internet mail gateway lets you correspond with business associates with accounts on the Internet or any major online service. You can also use NovaServer to provide product information, support, and even instant ordering to your customers—and the Internet gateway can give a small company a worldwide presence by allowing anyone on the Internet to come right to your electronic doorstep.

NovaServer in Education. NovaServer and education are a perfect match—both are, in the final analysis, about communication. A school's NovaServer connected to the Internet becomes a learning resource for teachers and students and a vehicle for communication between the school and the community it serves. Connecting students to the global Internet brings the class around the world as close as the class down the hall.

Many schools are already using NovaServer to help make their students into citizens of the world. Scantron Quality Computers, a pioneer in educational technology, chose NovaServer as the vehicle for theLINQ,TM its Internet service for schools. theLINQ adds several education-specific features and services to NovaServer's already extensive capabilities. For more information on theLINQ, contact Scantron Quality Computers at 1-800-777-3642, or send electronic mail to info@thelinq.net.

NovaServer on the Internet. Connecting NovaServer to the Internet gives your existing clients access to Internet mail, Usenet newsgroups, Telnet (allowing them to connect to other computers on the Internet), and, of course, the World Wide Web—obvious benefits. Just as important, though, are the benefits the citizens of the Internet will reap from your service, and the benefits *you* might reap from making your information available to a worldwide audience.

Perhaps you have a service that's useful to a relatively small group of people—say, podiatrists. Without the Internet, your market is limited to the podiatrists who live in your local calling area, plus those few who are willing to call long-distance for your information. But get yourself on the Internet and suddenly every podiatrist in the world can get to your service through their \$20-a-month shell account, without a long-distance phone call. The benefits to any organization, whether you're selling something or not, should be obvious. And as we continue to add more powerful Internet connectivity to NovaServer, your Internet clients will be able to get more and more out of your service.

OPTIONAL FEATURES

At ResNova, we know that no two information services have the same needs. We also believe that you shouldn't pay an outrageous price for a base configuration that includes features you won't use. The basic NovaTerm package, with one serial node, is enough to set up a simple BBS—without much of a cash outlay. You get the ability to use hypertext (HTML) documents on your server, InfoLink networking, and a customizable text-based and graphical user interface right out of the box. You can add additional nodes, more user licenses, and more client connectivity options (such as more serial nodes) as you need them. You can also add the following option packages:

- **QuickMail.** Allows your NovaServer to exchange electronic mail with a CE Software QuickMailTM server. NovaServer sees the QuickMail server as a network site, and QuickMail sees NovaServer as a mail center.

- **Telnet.** Allows users of your server to connect to any Internet resource that uses the standard Telnet protocol. Requires the TCP/IP option described below.
- **SMTP.** Allows your NovaServer to exchange electronic mail with Internet hosts using standard SMTP (Simple Mail Transfer Protocol) and gives every user of your server an Internet mail address. Your users don't need an Internet connection of their own to use this feature! Requires the TCP/IP option described below.
- **NNTP.** Allows your NovaServer to receive and post messages to Usenet newsgroups using standard NNTP (Net News Transfer Protocol). Your users don't need an Internet connection of their own to use this feature! Requires the TCP/IP option described below.
- **AppleTalk.** Allows users to access your server over an AppleTalk local area network, and also lets your server exchange messages by InfoLink with other NovaServers over AppleTalk.
- **TCP/IP.** Allows users to access your server over a TCP/IP local area network or the Internet, and also lets your server exchange messages by InfoLink with other NovaServers using TCP/IP protocols. Requires MacTCP or Open Transport software and a SLIP, PPP, or dedicated Internet connection.
- **AppleSearch.** Allows users of your NovaServer to search indexed collections of documents stored in AppleSearch info sources and (if your AppleSearch server is so configured) in WAIS databases on the Internet. Your users don't need an Internet connection of their own to use this feature!
- **Web Out.** Allows users who access your server with NovaTerm to request hypertext (HTML) pages from the World Wide Web. Your users don't need an Internet connection of their own to use this feature! (Even without the Web Out option, users can access HTML documents stored on your NovaServer. Web Out just opens up the floodgates to the fastest-growing Internet resource in the world.) Requires the TCP/IP option described above.
- **Web Publishing.** Allows you to store hypertext (HTML) documents on your NovaServer to make them available to World Wide Web users all over the Internet. Requires the TCP/IP option described above.

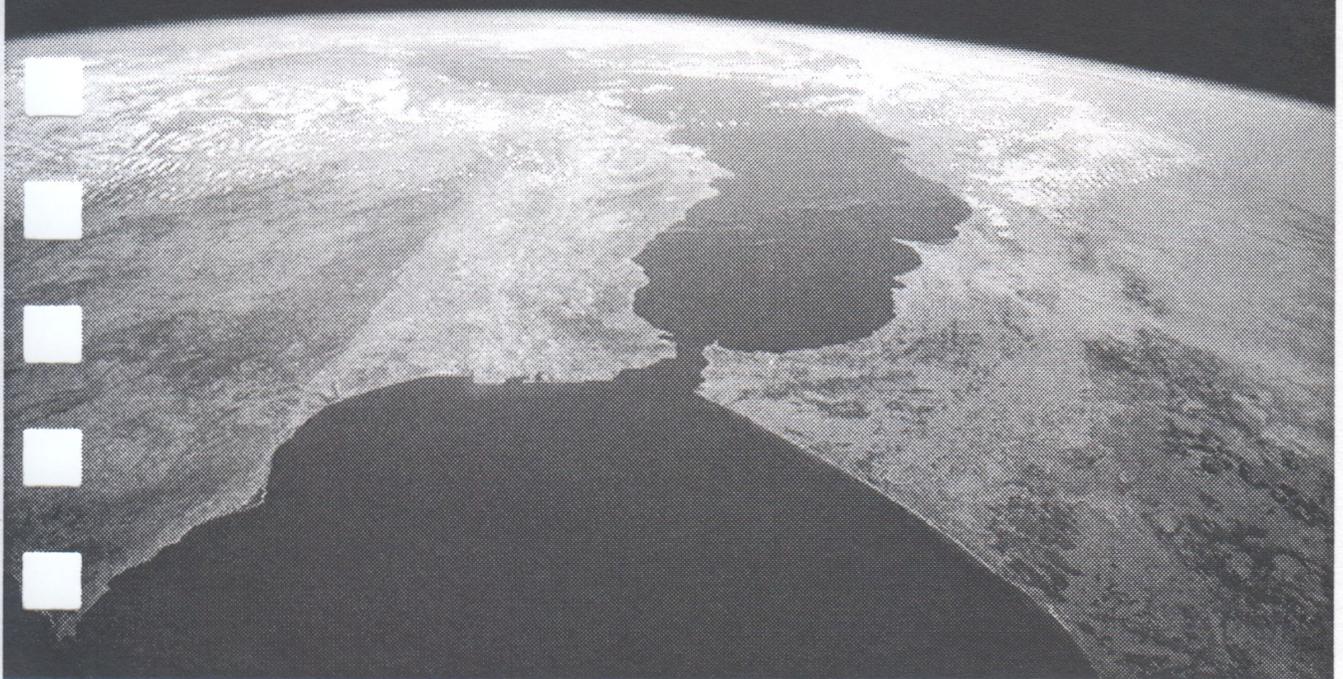
Best of all, when you add these features to your NovaServer, you don't need a software upgrade. We simply send you, via electronic mail, a new key file which contains activation codes for the new features you've licensed. (It's less than a kilobyte in size.) You install the new key file and your server instantly has access to the new features.

WELCOME TO THE NEW UNIVERSE

The online universe is a constantly-expanding constellation of computers, networks, and people—and it's making it possible for people around the world to communicate more effectively every day. We welcome you to this new universe, and encourage you to make a home here. In NovaServer, we've given you the tools you need to build your *own* online world. And we can't wait to see what you do with them!

GETTING
STARTED

.....



This section includes chapters designed to help you set up and launch NovaServer for the first time. These chapters include:

Chapter 1	Recommended Hardware and Software	15
Chapter 2	Installing NovaServer	23
Chapter 3	Basic Server Operations.....	49

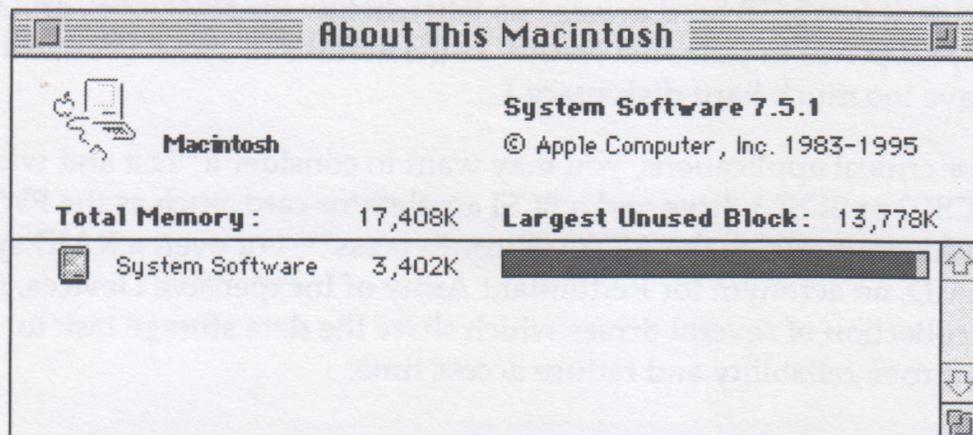
RECOMMENDED HARDWARE & SOFTWARE

- *In this chapter, you'll learn what hardware and software you need to run NovaServer.*

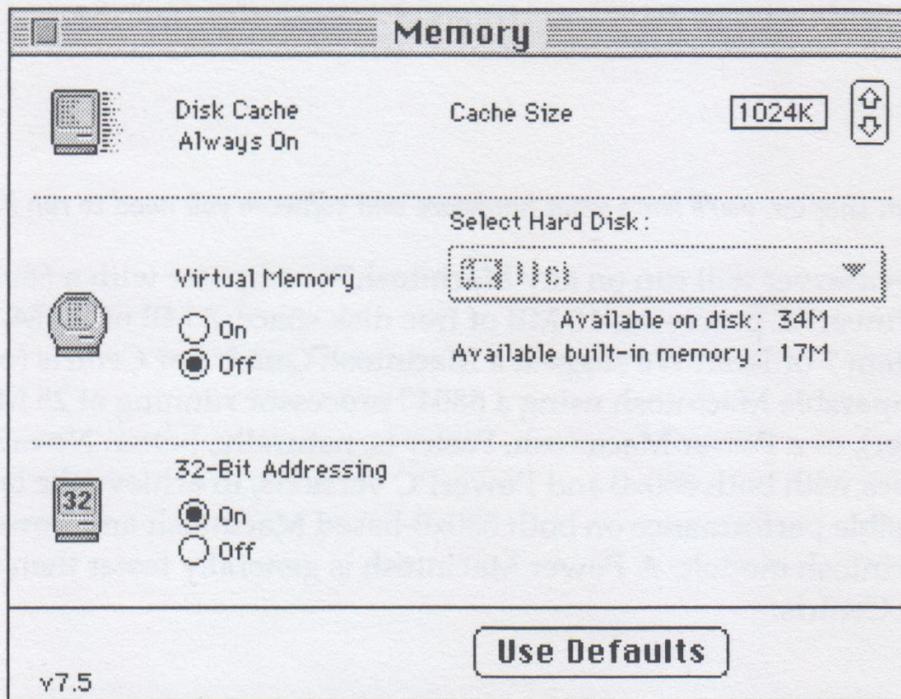
NovaServer will run on any Macintosh™ computer with a 68030, 68040, or PowerPC processor; 10 MB of free disk space; 8 MB of RAM; and System 7 or later. We suggest a Macintosh Quadra or Centris (or any comparable Macintosh using a 68040 processor running at 25 MHz or faster), or a Power Macintosh. Faster is, naturally, better. NovaServer comes with both 680x0 and PowerPC versions, to achieve the best possible performance on both 680x0-based Macintosh and Power Macintosh models. A Power Macintosh is generally faster than a Quadra or a Centris.

MEMORY (RAM)

The NovaServer application with one node (a node represents a single caller or user of the server) requires a minimum of 3500K of RAM to run. Each additional simultaneous user adds approximately 200K of RAM to NovaServer's memory requirements. To this, you should add the total amount of memory consumed by your System Software (see the About this Macintosh dialog box in the Finder, as shown below), plus a cushion of 500 to 1000K for future expansion and system use, to determine the total minimum memory requirement for your application.



A NovaServer with minimal System Software and only a few nodes can run comfortably on a Macintosh with 8 MB RAM. Adding more RAM and allocating some of it to the NovaServer application can further improve performance, as can increasing the size of your server's disk cache (in the Memory control panel, shown below) to 1024K or higher.



For best performance, we do not recommend using virtual memory or Connectix RamDoubler™ on the computer running NovaServer.

HARD DRIVE

Since NovaServer is a very disk-intensive application, the speed of your hard drive subsystem also has a significant impact on performance. Use the fastest and largest hard drive you can afford. At this writing, the price of fast 1 GB hard drives has fallen below the \$500 level, and we expect prices to plummet further in the months to come. (You can never have too much hard disk space.)

For critical applications, you may want to consider a “fast and wide” SCSI 2 or SCSI 3 drive and a SCSI accelerator card, such as the FWB SCSI JackHammer™ or the ATTO SiliconExpress™—or even a RAID system. RAID, an acronym for Redundant Array of Inexpensive Devices, refers to a collection of several drives which share the data storage task to improve reliability and reduce access time.

You won't see much of a performance improvement using these special hard drive setups on anything but the fastest Macintosh models, but they will definitely give you that extra ounce of performance when you need it most.

BACKUP DEVICES

NovaServer can automatically back itself up to another hard drive, or to an AppleShare server on your server's local area network (LAN). You should make backups of your server regularly, so a second hard drive the same size as your main drive may be a good investment. A Digital Audio Tape (DAT) backup drive is a fast and reliable backup option, although you must quit the NovaServer software to back it up to DAT (or else have NovaServer back itself up to a hard drive first, and then back up that drive to DAT, using a software package like Dantz Retrospect™ running on the server or on another machine on the same network).

NETWORKING

If you will be using multiple Macintosh computers running NovaServer in a virtual server configuration, you will need to connect the computers to a network. With its superior performance, Ethernet is the network protocol of choice for this use.

Ethernet can run over two kinds of wiring, referred to as ThinNet (coaxial cable similar to the type used for cable television connections) and 10-Base T (twisted pair cable similar to telephone wire). Macintosh models that have built-in Ethernet interfaces (including most Quadra and Power Macintosh models) need only a transceiver to connect to either type of Ethernet. Macs that don't have built-in Ethernet will need an interface—either a NuBus card installed in one of the computer's slots, or a SCSI device that connects to the computer's hard drive port.

LocalTalk is built into every Macintosh and is extremely easy to set up and use. You don't need a hub or a dedicated network file server, as you do with some Ethernet implementations. The most economical way to connect Macintosh computers in a LocalTalk network is with adapters that connect the computer's printer port to standard modular telephone cable. Such adapters are sold under the brand names PhoneNet,™ ModuNet,™ and many others.

We do not recommend using LocalTalk with NovaServer, since it's considerably slower than Ethernet, and doesn't support Internet TCP/IP protocols well.

We don't intend for this manual to take the place of networking expertise or a good network reference manual. Consult the relevant Apple documentation for more information on your Macintosh's networking capabilities.

INTERNET HARDWARE

If you plan to network NovaServer to the Internet—for electronic mail, newsgroups, Telnet in/out, or World Wide Web—you will also need to connect your Macintosh to the Internet.

SLIP/PPP. The least expensive Internet connection option is usually a SLIP or PPP account with a local Internet Service Provider. Many providers offer low-cost SLIP/PPP accounts with a flat rate for a set number of hours (or, sometimes, for an unlimited number of hours), usually in the \$30-\$40 range. All you need to use it is a modem and an unused serial port on your server. (The modem you use for your SLIP or PPP connection cannot be shared with one of NovaServer's nodes.) A SLIP or PPP account is adequate for exchanging electronic mail and newsgroup messages with the Internet, since you can schedule these messages to be delivered all at once at a certain time. However, since it's not necessarily a full-time connection (most providers log you off after a certain period of inactivity), and because its speed is limited, it may not be suitable for World Wide Web browsing or for allowing telnet access into or out of your server.

ISDN. Another option is ISDN, Integrated Services Digital Network, telephone service. ISDN Internet access is usually considerably more expensive than a dial-up SLIP/PPP connection, but much less expensive than a dedicated connection. You will need to find an Internet Service Provider that supports ISDN, order an ISDN line from your local telephone company, and obtain ISDN access hardware for your Macintosh.

ISDN access hardware consists of two separate devices: the *network terminator* (NT1) and the *terminal adapter* (TA). The NT1 connects to the telephone company's line and provides a jack into which you can plug other ISDN devices. The TA is the ISDN equivalent of a modem, and allows you to connect your computer's serial port to the ISDN line. (Some ISDN terminal adapters include a built-in NT1.)

Both serial and NuBus ISDN devices are available. Motorola's Bitsurfer™ is a popular serial ISDN access device; the Euronis Planet ISDN™ card is a popular NuBus ISDN card. To take full advantage of a serial ISDN terminal adapter, you will need a Power Macintosh or a high-speed NuBus serial card (such as the Creative Solutions Hustler™), since earlier Macintosh serial ports can't always keep up with ISDN.

ISDN provides two data channels, either of which can carry up to 56,000 bits per second (bps) and be used for voice or data. You will want to make sure that both the terminal adapter and the Internet provider you choose support *bonding*, a process that allows both data channels to be used simultaneously for up to 112,000 bps. Your ISDN terminal adapter and your Internet provider must both support bonding. (Most Internet providers charge two bonded channels at the same rate as two single channels—that is, double the price for double the bandwidth.)

Since ISDN is a dial-up line like your regular phone line (albeit a fast one), it may not always be your best choice, either. You still need SLIP or PPP running on the ISDN line. While most Internet providers offer an option that allows you to remain continuously connected to the Internet through the ISDN line, and even to have your own permanent Internet address, many telephone companies charge by the minute for ISDN calls, making this impractical in some localities. In most cases, then, a dedicated Internet line is the best choice for a server that you want to put on the Internet permanently.

Dedicated lines. Dedicated phone lines are available in two basic speeds: 56K and 1.5M (million) bps. The latter is referred to, in telephone company jargon, as T1, and has the capacity of twenty-four 56K lines. Dedicated lines are run directly from your server's location to your Internet provider. The monthly cost, including charges from both your telephone company and your Internet provider, ranges from \$200- to 400 for a 56K line to \$2000 to \$4000 for a T1. (Some Internet providers allow you to use only part of the T1's capability—say, only 256K BPS—at a lower price, saving money on the Internet provider's fee, but you will still pay the telephone company full price for the line.) Installation and initial hardware, including a Channel Service Unit (CSU), a Data Service Unit (DSU), and a router will probably cost between \$4000 and \$6000. Some Internet providers allow you to lease the necessary hardware.

A dedicated line typically is used to connect an Ethernet LAN to the Internet. To use a dedicated connection, then, your Macintosh will need to be on an Ethernet network, which will be connected to the Internet through a *router*, a device that passes network traffic between the local area network and the Internet.

We recommend finding a local Internet Service Provider with a good reputation for support, particularly one that knows about the Macintosh.

MODEMS

Virtually any Hayes-compatible modem can be used with NovaServer. ResNova uses US Robotics Courier™ v. Everything modems on NovaCentral; we chose these modems because they support a variety of protocols (HST, v.32terbo, and so forth) and have found them to be very reliable in extended operation. Many other manufacturers, however, also make quality modems, including US Robotics, Supra, Practical Peripherals, Hayes, and Motorola. Most manufacturers have a purchase program that allows system operators to purchase modems at a sizable discount. Before making a decision to purchase a quantity of modems, check with other NovaServer operators on NovaCentral, the ResNova support server, to find out about their experiences. The Usenet newsgroup `comp.dcom.modems` is also a good resource.

Make sure you use a modem cable that supports CTS/RTS hardware handshaking and carrier detect (DCD). Properly-wired cables are available from ResNova; Chapter 20, "Cable Configuration," can help you determine whether cables you already have are wired correctly, or tell you how to make your own.

SERIAL PORTS

If you will be running a multi-line system (one that allows several modem callers to connect simultaneously), you will need as many modems and serial ports as you have telephone lines. A basic Macintosh can handle two modems with its built-in serial ports, unless you are using LocalTalk. LocalTalk uses the printer port, so only the modem port is available for use. (Ethernet leaves both serial ports free.)

If you want to go beyond the number of modems supported by your Macintosh's base configuration, you can add serial cards to the computer. The Creative Solutions Hurdler™ card is a NuBus card with four serial ports, supporting up to 56K bps on each port. The Hustler™ card, also from Creative Solutions, gives you two serial ports supporting up to 230K bps each—perfect for ISDN and for providing maximum throughput on high-speed modems. Both are supported by NovaServer. ResNova is an authorized Creative Solutions dealer, and the Hurdler and Hustler can be purchased directly from us.

If you need more modems than can be supported by adding Hustler or Hurdler cards to your Macintosh, consider adding a NuBus expansion chassis, such as the Second Wave Expanse NB4 or NB8. These chassis take up one NuBus slot in your Macintosh and convert it to four or eight NuBus slots in a separate enclosure, which contains its own fan and power supply, for a total gain of three or seven more NuBus slots (a total of 12 or 28 more modems using Hurdler cards). ResNova is an authorized Second Wave dealer, and the Expanse NB4 and NB8 can be purchased directly from us.

Another option for supporting large numbers of modem connections, one that's particularly good for large, multiple-server setups, is a device called a *terminal server*. A terminal server (sometimes called a modem server or an access server) is a device that allows modems to be placed on an Ethernet network; incoming calls are connected to the server as TCP/IP (Internet) connections. With a terminal server, you don't need Hurdler cards in your Macintosh—in fact, you can even use a Macintosh without any slots as your server—and you gain considerable flexibility in how you allocate modems to the various machines on your network. Expect to pay \$2000 or more for a terminal server, depending on the number of ports and features you need. ResNova is an authorized Xyplex dealer, and their full line of terminal servers can be purchased directly from us.

SYSTEM SOFTWARE

We recommend using an up-to-date version of the System Software. At this writing, the latest version is System 7.5.1. If you are using an older version of System 7, the NovaServer installer will also install the Thread Manager, which is included in System 7.5 but is a separate extension in earlier versions.

If you are using a Macintosh IIx, a Quadra 950, or certain other Quadra models, you will want a copy of the Serial Switch control panel if you are using the Mac's Modem or Printer port with NovaServer. Use this control panel to change the ports to Compatible before attempting to run NovaServer.

If you are running NovaServer on a Macintosh that requires the MODE32 extension, from Connectix, to access more than 8 MB of RAM, make sure you are using version 7.5 of the MODE32 Control Panel. (You can use version 7.5 of MODE32 with any version of System 7, not just System 7.5.) Prior versions of MODE32 are incompatible with the Thread Manager and may lead to data loss. You can find a copy of MODE32 7.5 in the Connectix forums on America Online and eWorld, among other places.

If you will be connecting the server to the Internet, you will need MacTCP or Open Transport and, if you are using a normal modem or ISDN connection, either a SLIP or PPP program. MacTCP is included with System 7.5; if you are using an older version of System 7, you will need to purchase a copy. An easy and economical way to get MacTCP and other Internet programs is by buying *The Internet Starter Kit*, a book-and-disk combination that includes MacTCP and SLIP software. It should be available at any bookstore with a well-stocked computer section. You may also obtain SLIP or PPP software on the Internet, on the popular Info-Mac FTP sites—or ask your Internet provider if they can provide a copy.

You will want to turn off the parts of the System Software that steal time from other programs (such as System 7.5's menu-bar clock) and take up memory for features that aren't necessary on a server (such as System 7.5's Apple Menu Options). Doing so can make more resources available for NovaServer and allow your server to run more efficiently. (We include many screen blankers, such as After Dark, in this admonition. Instead, we suggest turning off the monitor, or turning down its brightness, to prevent burn-in. An Energy Star monitor on a Macintosh which supports it is an ideal hardware solution, since the monitor can be set to turn itself off after a period of inactivity. If you prefer a software solution, we suggest Basic Black, an extension which uses very little CPU time.)

For similar reasons, we also do not recommend running other servers (such as AppleShare,TM QuickMail,TM or ButlerTM) on the same computer as NovaServer.

INSTALLING NOVASERVER

- *In this chapter, you'll learn how to install your NovaServer software and key file, and adjust the server's memory allocation.*

Now that you've made sure you have the right hardware and software to run NovaServer, you're ready to begin installation. It takes just a few minutes to install—then you can begin customizing it to suit your own needs and tastes.

INSTALLING THE SERVER APPLICATION SOFTWARE

To install NovaServer:

- 1 **Start up your Macintosh, holding down the Shift key to prevent extensions from loading.**
- 2 **Insert the first installation disk (or the CD-ROM) into your Macintosh's 3.5" (or CD-ROM) drive.**

The disk appears on the Desktop and automatically opens a Finder window (below). (The name of the window or the icon on the disks you received may differ slightly from our illustration if the software has been revised since this manual was printed.)



- 3 Double-click the NS Installer icon to start the installer.**

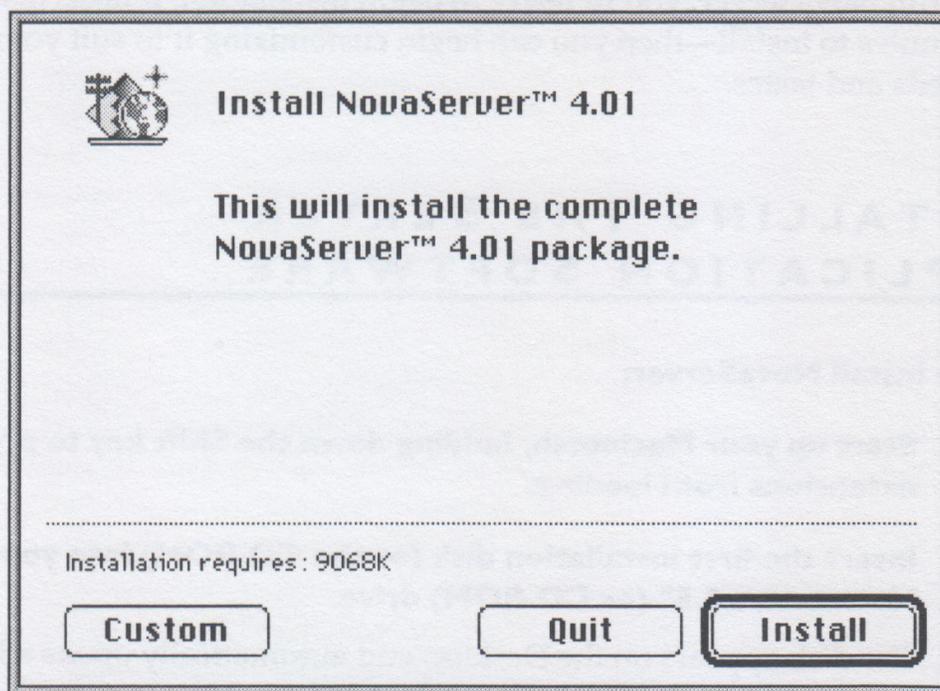
The Installer's splash screen appears.

- 4 Click Continue, or press the Return key, to continue past the Installer's splash screen.**

The License Agreement screen appears.

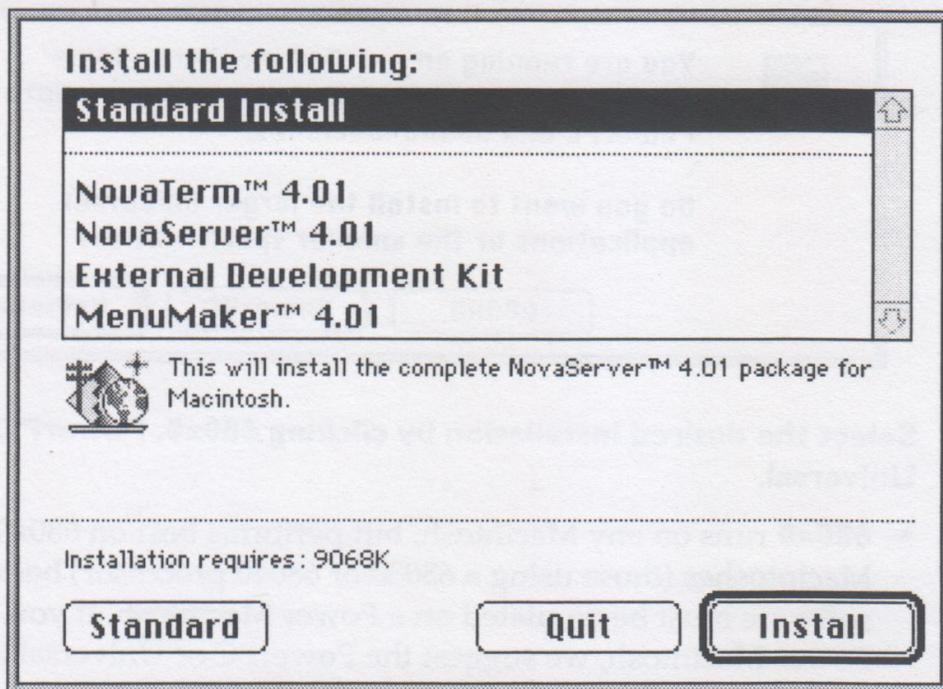
- 5 Read this material carefully, then click Continue or press Return to proceed with the installation if you agree to the terms of the license agreement.**

The Standard Installation dialog (below) appears. (The version number displayed may be different if the software has been updated since the last printing of this manual.)



- 6 If the Standard Installation described is not acceptable to you, click Custom and select an alternate installation from the list presented.**

The Custom Installation dialog is shown on the next page.



You may choose to install one or more of the following items:

- **NovaTerm** Graphical client software for the 68K and PowerPC
- **NovaServer** Information server software (and associated files)
- **External Development Kit** Information on creating your own NovaServer add-on software (externals)
- **MenuMaker** Software for creating your own custom graphical user interface for your callers

7 Click Install.

Depending on the installation you have selected, the Installer may tell you that this installation requires that your Macintosh be restarted after it is complete. Click Yes to acknowledge this warning if it appears.

Next, depending on the installation you have selected, the Installer may ask you whether you want to install 680x0, PowerPC, or universal versions of the software, as shown on the next page.



You are running on a 680x0 machine. Some applications to be installed can be run on both PowerPC and 680x0 machines.

Do you want to install the larger Universal applications or the smaller specific ones?

680x0

PowerPC

Universal

8 Select the desired installation by clicking 680x0, PowerPC, or Universal.

- **680x0** runs on any Macintosh, but performs best on 680x0-based Macintoshes (those using a 68030 or 68040 processor) because the software must be emulated on a Power Macintosh. If you have a Power Macintosh, we suggest the PowerPC or Universal choice.
- **PowerPC** runs only on the Power Macintosh and provides superior performance on that computer. (This choice installs a so-called native application.)
- **Universal** runs on any Macintosh and contains code optimized for both 68030/68040 Macintoshes and the Power Macintosh. In essence, the Universal choice installs two versions of the program that share the same icon. Use this choice when you will be using the same software on both kinds of Macintosh models, or when you don't know in advance what type of Macintosh will be using the software. (This choice installs a so-called fat application.)

Next, the Installer asks you where to put the NovaServer Install Folder, using a standard Save dialog.

9 Navigate to the drive or folder where you wish to place the NS Install Folder, then click Install.

Installation begins. If you are installing from 3.5" disks, the first disk is eventually ejected, and the Installer requests the next disk. Insert it, and the installation continues. Follow this same procedure for any additional disks. (At this writing, the NovaServer software spans five 3.5" floppy disks.) When the last disk has been read, the first disk is requested.

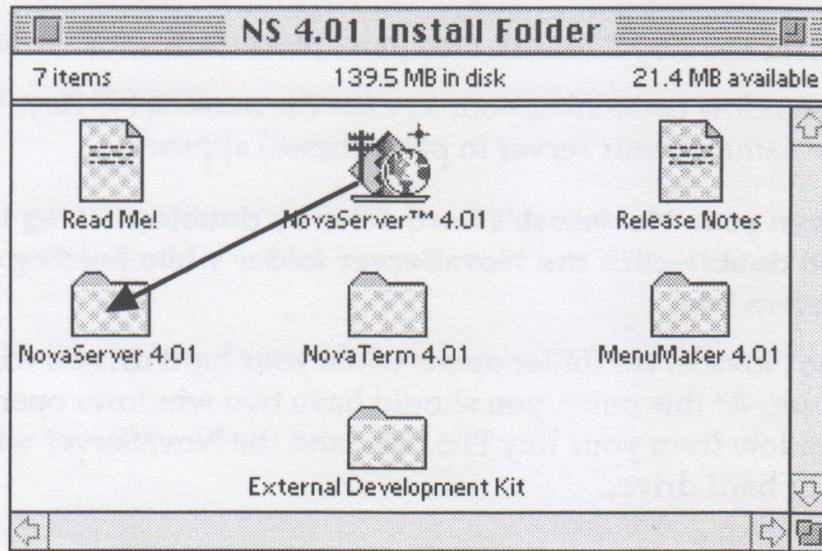
When installation has been completed, an alert appears, reminding you that you need to restart your Macintosh, because your System Folder has been changed.

10 Click Restart.

Your Macintosh restarts and your System Software and Finder are reloaded. Wait until the Finder is ready, then continue with the next step.

11 Open the NS Install Folder.

You can find it on the drive or in the folder you chose in step 8. The NS Install Folder is shown below. (The name and contents of the folder may vary slightly from the illustration if the software has been updated since the printing of this manual.)



11 Drag the NovaServer™ icon into the NovaServer folder.

The NovaServer™ icon (which includes the application's version number as part of its name) is the icon for the NovaServer application. Dragging the icon into the NovaServer folder allows the application to access the data files used by the server.

Installation of the NovaServer application software and associated files is complete. You're ready to install your NovaServer key file.

INSTALLING YOUR KEY FILE

Included with your NovaServer package is a disk containing your *key file*. The key file is your authorization to run NovaServer. It's also how your server knows its name, its InfoLink address and the address of its supervisor, the optional features you have purchased, how many of each type of node you can install, and other information. When you purchase an upgrade to your server, we send you a new key file to enable the new features.

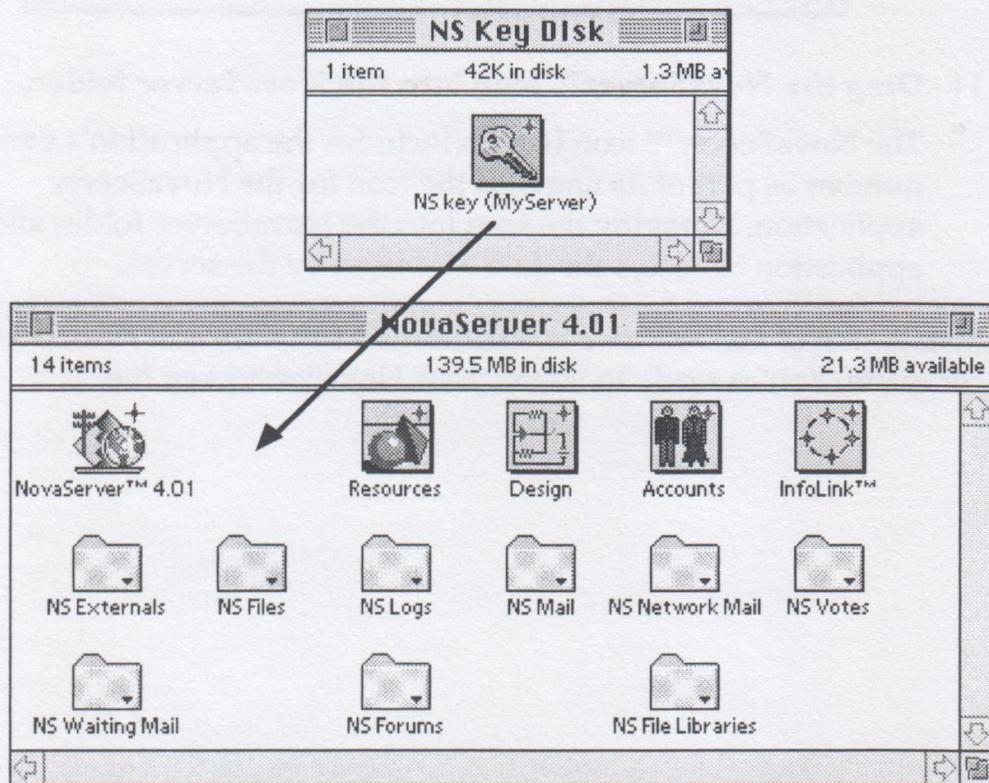
To install your key file:

1 Insert the Key File disk into your Macintosh's 3.5" drive.

A window containing your key file (its name is NS Key, followed by the name of your server in parentheses) appears.

2 Open your Macintosh's hard drive by double-clicking it, then find and double-click the NovaServer folder while holding down the Option key.

The NovaServer folder opens while your hard drive's window closes. At this point, you should have two windows open: the window from your Key File disk, and the NovaServer window from your hard drive.



- 3 **Drag the NS Key file from the Key File disk window to the NovaServer window.**

The Finder copies your key file into the NovaServer folder. The key file must be in the same folder as the NovaServer application.

- 4 **Click the key file's name to begin renaming it.**

After a brief pause, the key file's name becomes editable.

- 5 **Type NS Key and press Return.**

The key file must be named NS Key to allow NovaServer to recognize it. We ship the key file with your server's name on it to avoid confusion with other key files, but it won't work until you name it NS Key.

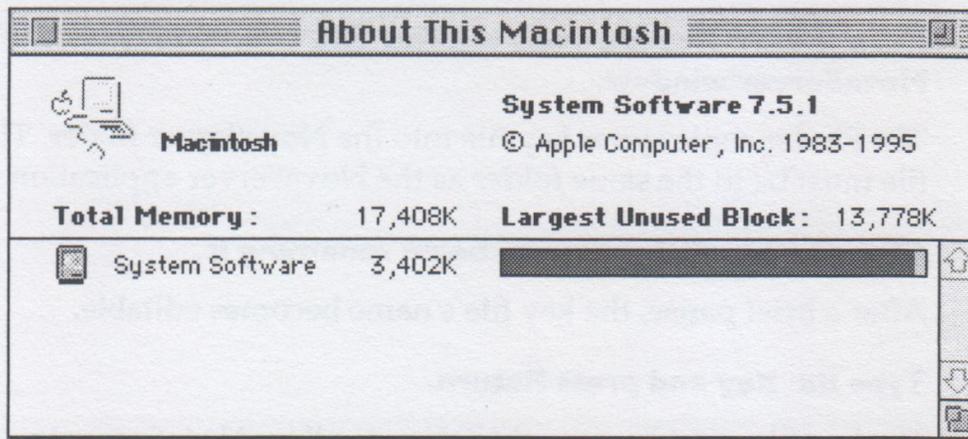


Your NovaServer key file is now installed. You're ready to adjust NovaServer's memory allocation.

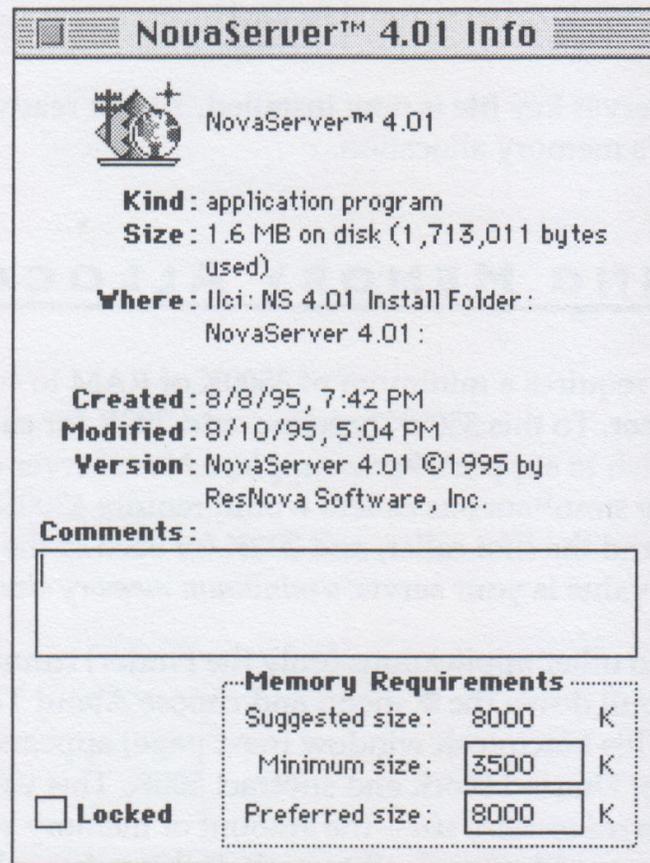
ADJUSTING MEMORY ALLOCATION

NovaServer requires a minimum of 3500K of RAM to support a single connected user. To this 3500K baseline, add 200K for each simultaneous caller you wish to support. For example, a NovaServer configuration that supports five simultaneous callers would require 4300K: 3500K for the application and the first caller, and 200K for each of the four additional callers. This value is your server's *minimum memory size*.

Next, with no other applications (only the Finder) running on your Macintosh, pull down the  menu and choose About This Macintosh. The About This Macintosh window (next page) appears. Note the value of the Largest Unused Block and subtract 500K. This value is your server's *preferred memory size*—the amount of memory your server would like if it had your Macintosh all to itself. If this value is less than the minimum memory size, your particular server configuration needs more memory to run properly.



Before starting NovaServer for the first time, you should tell the Macintosh about the server's memory needs and preference. To do this, open the NovaServer folder and click the NovaServer application once, then choose Get Info from the Finder's File menu. The NovaServer Info window (below) appears.



Enter the server's minimum memory size into the Minimum Size field, and the preferred memory size into the Preferred Size field. (Versions of System 7 prior to 7.5 may not allow you to edit the Minimum Size field. In this case, you can only enter the preferred memory size.) When you're done, close the NovaServer Info window.

- *Whenever you add more simultaneous callers to your server, you should adjust the minimum memory size of the application upward by 200K per caller.*

You're now ready to start NovaServer for the first time! The next chapter tells you how to configure your server's nodes, network sites, and initial accounts—and more—to get your server running.

BASIC SERVER OPERATIONS

- *In this chapter, you'll learn how to start up and shut down the server, configure your nodes, set up network sites, set server preferences, create initial accounts, and monitor the server's operation.*

STARTING NOVASERVER

To start NovaServer, open the NovaServer folder and double-click the NovaServer application icon (below).



NovaServer™ 4.01

You may wish to make an alias of the NovaServer application and move it to your Apple Menu Items folder (inside the System Folder on your startup disk), so that you can easily start the server by selecting it from the  menu at the left of your menu bar.

To make NovaServer automatically start up when your Macintosh starts up, make an alias of the NovaServer application and move it to the Startup Items folder (inside the System Folder on your startup disk). Thereafter, NovaServer starts up automatically whenever you start up the Macintosh.

To *prevent* NovaServer from loading at startup when an alias of the application is in the Startup Items folder, press the Shift key after the Welcome to Macintosh screen appears, and continue to hold it until the Finder loads.

QUITTING NOVASERVER

To quit NovaServer so that you can use your Macintosh for other purposes, pull down the File menu and choose Quit. Any modems assigned to a NovaServer serial node are taken off-hook so that callers get a busy signal while NovaServer isn't running. Incoming network connections are also rejected.

If there are users logged on to the server, you are asked how many minutes you want to wait before the server quits. The server sends a notice to any users logged on at the time, warning them that the server is about to shut down and telling them how long they have to finish what they're doing. No additional users can log on while a shutdown is pending. When the time period you specified has expired, or when the last user has logged off, the NovaServer application quits.

CONFIGURING NODES

When you first install NovaServer, it is configured for one node—a local node that allows you to log on to your server from the machine it's running on. One of the first things you need to do, then, is to configure your server to use any modems attached to it, and create nodes for AppleTalk and Internet users. (Follow this procedure in the future whenever you upgrade your server to support more nodes.)

Each node represents one user connection. The number of users who can connect to your server simultaneously is limited to the number of nodes on the server. However, callers who access your server with the NovaTerm client software over a local area network or the Internet do not require a pre-configured node. Instead, NovaTerm network users are added to the node list as they connect to your server, up to the total number of network nodes allowed by your NovaServer license.

Only text-mode callers can connect to the AppleTalk or MacTCP nodes you set up in this section; this allows you to allocate some of your resources for text-mode users, and some for NovaTerm users. If you wish to allow only NovaTerm users to connect to your server over the network, do not explicitly define any network nodes.

According to our tests, a Quadra 950 can support 25 to 30 simultaneous users comfortably; a Power Macintosh 7100/80 can support 40 to 50. You may be able to support more users if they can tolerate occasional delays, or if they do not often use resource-intensive functions such as NewScan.

To set up your nodes:

1 Choose Nodes from the Setup menu.

The Configure Node Settings window (below) appears.

Type	Port Name	Idle
1 Local terminal		5

Add Node Type: Timeout in Mins.

2 Choose the desired type of node from the Add Node Type pop-up menu at the bottom of the window.

Available node types include:

- **AppleTalk.** For connecting to the server over an AppleTalk network
 - **Comm Toolbox.** For connecting to the server using a protocol defined in a Communications Toolbox tool
 - **Local.** For connecting to the server from the same machine it's running on
 - **Serial.** For connecting to the server with a modem or another serial device
 - **TCP/IP.** For connecting to the server with the TCP/IP protocol over an Ethernet LAN or the Internet
- *The number and type of nodes you can add is limited by your NovaServer license. AppleTalk and TCP/IP nodes require the respective option packages.*

3 Select any necessary additional options from the pop-up menu that appears next to the Add Node Type menu.

The actual name of this pop-up menu varies depending on the type of node you're adding. You may skip this step for Local and AppleTalk nodes, which do not require additional configuration.

- **For Comm Toolbox nodes**, select a communications tool and, if necessary, configure it.
- **For Serial nodes**, select a serial port and a modem type. Be careful not to assign the same port to two nodes, or to assign the port that's being used by a SLIP/PPP modem or ISDN connection to a node. If you are using the Macintosh's built-in LocalTalk networking, rather than Ethernet, do not assign the Printer port to a node. (You may use the Printer port for a node if you are using Ethernet, or if you are not on a LAN and turn AppleTalk off.)
- **For TCP/IP nodes**, select whether you wish to add a Telnet node or a SMTP node. Telnet nodes allow users to connect to the server using the TCP/IP telnet protocol. SMTP nodes are used for electronic mail networking with Internet hosts; if your server sends or receives Internet mail, you should have at least one SMTP TCP/IP node. (See Chapter 12, "Networking with the Internet," for more information on Internet mail.)

4 Enter a timeout value, in minutes, for this node in the Timeout field.

This value tells NovaServer how many minutes of inactivity are tolerated before a user is disconnected from the server, freeing the node for another user. A timeout of zero indicates that users should never be disconnected for inactivity. For modem and TCP/IP nodes, the default timeout of five minutes is usually acceptable. For AppleTalk nodes, which are generally on your local area network, you may want to extend it or even eliminate it entirely if you are using it in an environment (such as a corporation or school) where you want to allow users to remain connected all day if they like.

5 Click the node before which you wish the new node to appear.

For example, if you want the new node to be the first node on the list, click the existing first node. All existing nodes are shifted down the list when the new node is added. If you want the new node to appear last on the list, click the blank space after the last node.

6 Click the Add button to add the new node.

The new node is added and displayed in the Nodes window.

- 7 If you wish to add additional nodes, repeat steps 2-6 until all nodes have been added.
- 8 Close the **Configure Node Settings** window by clicking its close box or by pressing **⌘W**.

An alert appears reminding you that you must quit and restart the server before new nodes will appear.

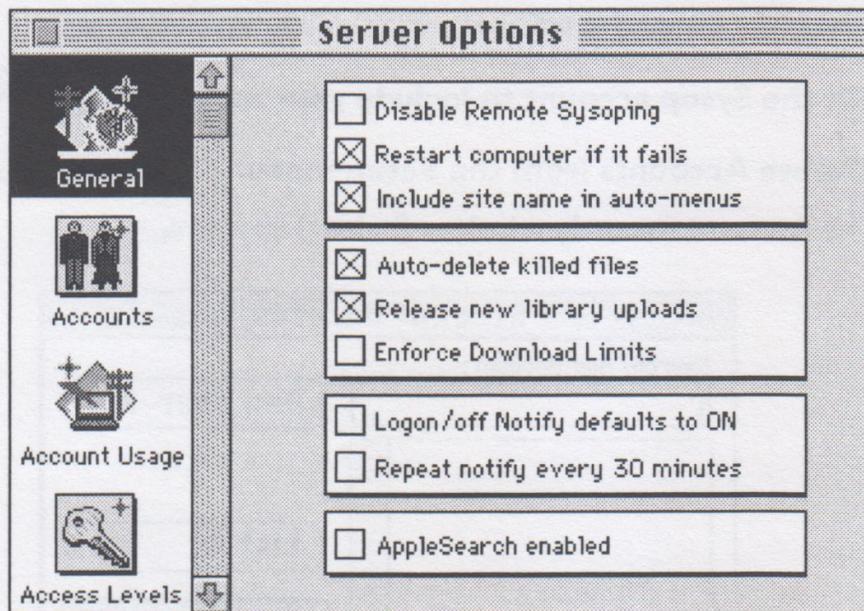
- 9 Click **OK** or press **Return** to clear the alert.
- 10 Choose **Quit** from the **File** menu to exit **NovaServer**.

NovaServer quits, and you are returned to the Finder.

- 11 Re-launch **NovaServer** by double-clicking the **NovaServer** application to install your new nodes.

SETTING YOUR SERVER OPTIONS

Before allowing the public into your server for the first time, you should set a few server options to reflect your preferences. These settings can be changed from the **Server Options** window, accessed by choosing **Options** from the **Setup** menu. NovaServer displays the window shown below.



Each icon in the scrolling list represents a panel of related settings. Most of the options are self-explanatory; you can find a complete description of any that aren't obvious in Chapter 14, "Server Reference." It's a good idea to familiarize yourself with these options now. For example, you may want to activate the Private Board (No New Users) checkbox, in the Accounts panel, so that users cannot create their own accounts until you are ready to open your server to the public. (You, as the system operator, can still create accounts; however, users cannot set up their own accounts by logging on with the account ID New.)

CREATING INITIAL ACCOUNTS

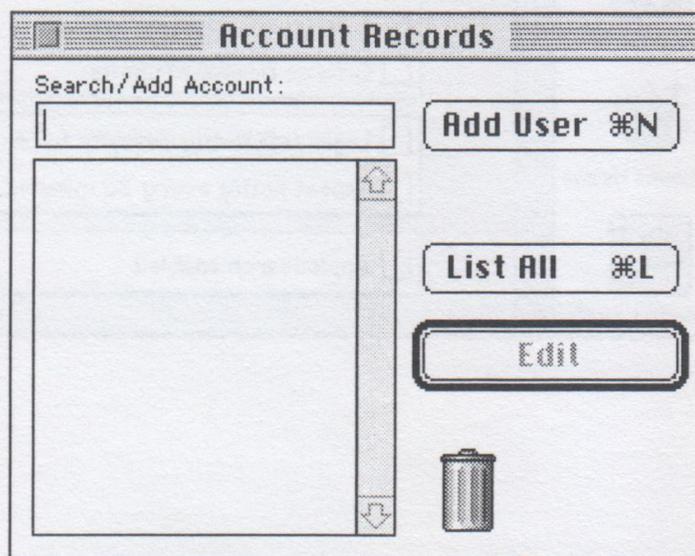
NovaServer initially has only one account, named Sysop—short for *system operator*. This is the account to which certain server error messages, dead electronic mail messages, and so forth are automatically mailed, so you should check it regularly. You cannot rename or delete this account, but you should edit it so it contains your name and has a password of your choosing. (Each NovaServer account has both a handle or screen name and a real name. "Sysop" is the screen name of the system operator account; its real name is up to you.)

- *If you are installing a multiple-machine virtual server (a network of NovaServers tied to a central account server), be sure to read Chapter 10, "Running a Virtual Server," for more information on setting up your account server.*

To edit the Sysop account to include your name and password:

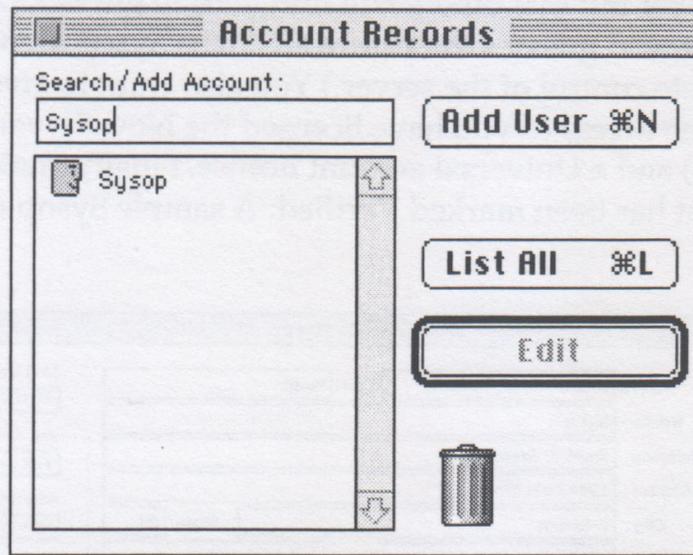
- I **Choose Accounts from the Setup menu.**

The Account Records window (below) appears.



- 2 **Type *Sysop* in the Search/Add Account field and wait a few seconds.**

The Sysop account appears in the account list.



- 3 **Double-click the *Sysop* account in the account list.**

The Sysop account record window (below) appears.

The screenshot shows a window titled "Sysop" with various fields for account information. The fields are arranged as follows:

- First: [] Last: []
- Handle: Sysop
- Company: []
- Address: []
- City: [] State: []
- Zip: [] Phone: []
- Password: [] Level: 1000 1000 1000 1000
- Uploads: 0 Calls: 4 Time/day: 0
- Downloads: 0 Posts: 0 K DId: 0
- Text Emulation: VT100
- Web Access: Full Access
- Account License: Universal
- Account Expires: Mth. Day Year (1 / 1 / 99)
- Expiration Active: []
- Verified: [x] Use NS Notifier: [] First Call: 6/30/95 Account ID: 1

- 4 **Fill in the fields in the account record with the pertinent information.**

You can press the Tab key to move from field to field, or click a field to edit it directly.

Make sure this account has an access level of 1000, 1000, 1000, 1000 (the maximum allowed by NovaServer), and ensure that the Minutes per Day and Days to Expiration fields both contain zeroes (signifying unlimited time). Set the password to something you find easy to remember but that others will find hard to guess. (Remember, anyone who guesses the password to the Sysop account has complete control of the server.) You also want to give this account full Web access (if you have licensed the NovaServer Web Out option) and a Universal account license. Finally, make sure that the account has been marked Verified. A sample Sysop record is shown below.

5 Close the Sysop account record window by clicking its close box or by pressing ⌘W.

An alert appears asking you if you want to save the changes you made to the account.

6 Click Yes or press Return to save the changes.

Additional accounts. In addition to editing the Sysop account, you might also want to create a second account for yourself. You might then use the Sysop account for receiving and replying to official business, such as server messages, user feedback, and so forth—and use your second account for participating in discussions, especially when others know you better by a certain handle or screen name. You may also want to add accounts for the other people (moderators or co-sysops) who are assisting you in running the system.

To add accounts:

- 1 If the Account Records window is not already on the screen, open it by choosing Accounts from the Setup menu.**

- 2 **Type the handle of the new account into the Search/Add Account field and wait a few seconds.**

NovaServer searches the account database for the handle you entered. If a user with the chosen handle already exists, it appears in the account list, in which case you should select a different handle for the new account and enter it instead.

- 3 **Click Add user or press ⌘N to add the account.**

An account record window for the new account appears.

- 4 **Fill in the fields in the account record with the pertinent information.**

Be sure to set a password for the new user; he or she won't be able to log on without one. Give moderators a high enough access level to delete messages and files, as defined in the Server Options' Access Levels control panel. If you have not changed the server's Access Levels (in the Levels panel of the Server Options window), give your moderators an access level of 900, 900, 900, 900. You probably also want to give them unlimited time per day, or at least larger allowances than your ordinary users, along with full Web access and a Universal account license. Finally, make sure that the account has been marked Verified. A sample moderator account record is shown below.

The screenshot shows a window titled "Dan Jones" with the following fields and controls:

- First: Dan, Last: Jones
- Handle: Dan Jones
- Company: (empty)
- Address: 5555 Elm Street
- City: Columbus, State: OH
- Zip: 43208, Phone: 614/555-8442
- Password: 81tangd, Level: 900 900 900 900
- Uploads: 0, Calls: 0, Time/day: 120
- Downloads: 0, Posts: 0, K DId: 0
- Text Emulation: VT100
- Web Access: Full Access
- Account License: Universal
- Account Expires: Mth. Day Year: 1 / 1 / 99
- Expiration Active
- Verified, Use NS Notifier, First Call: 8/28/95, Account ID: 3

- 5 **Close the account record window by clicking its close box or by pressing ⌘W.**

An alert appears asking you if you want to save the changes you made to the account.

- 6 **Click Yes or press Return to save the changes.**

NovaServer creates the new account.

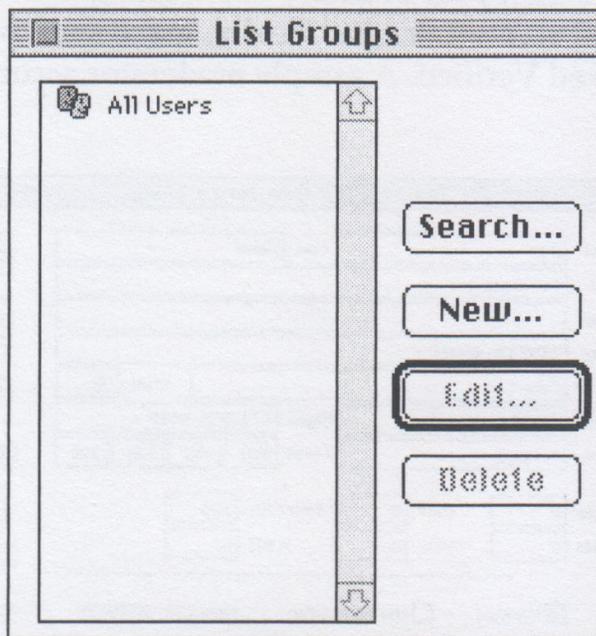
7 To add additional accounts, repeat steps 2-6.

Postmaster, Root, and Sysadmin. If you are connecting your server to the Internet, you may also want to create accounts called Postmaster, Root, and Sysadmin. Those are the traditional Internet mail addresses for the person in charge of a system's electronic mail (Postmaster) and for the system at large (Root and Sysadmin). You can either create a separate account for each address, following the steps above, or you can use NovaServer's Groups feature to make an alias that directs mail sent to either account name to the Sysop mailbox (or any other user's mailbox). For small systems, the alias technique is probably better, since the person who deals with these kinds of messages usually is, in fact, the system operator, and checking one mailbox is more convenient than checking two or three.

To create a mail alias that directs Postmaster, Root, or Sysadmin mail to the Sysop account:

1 Choose Groups from the Setup menu.

The List Groups window (below) appears.



2 Click New.

NovaServer asks you for a new name for the group.

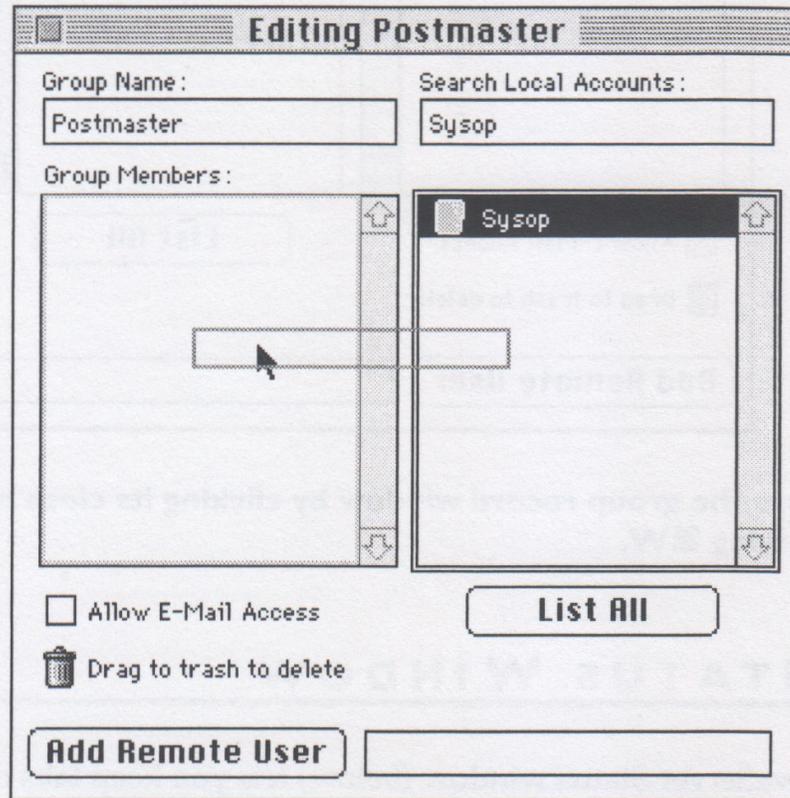
3 Enter Postmaster, Root, or Sysadmin, then press Return.

The Postmaster (or Root or Sysadmin) group record window (next page) appears.

- 4 **Type *Sysop*, or the handle of the person who will handle the mail for the account, into the Search Local Accounts field, and wait a few seconds.**

The Sysop account (or the other account you specified) appears in the list below the Search Local Accounts field.

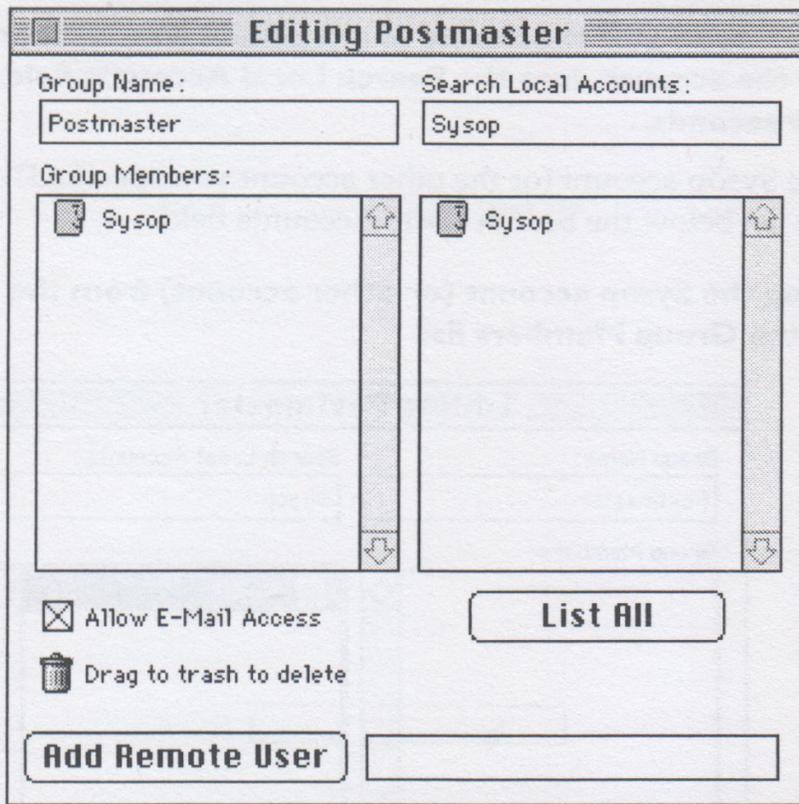
- 5 **Drag the *Sysop* account (or other account) from the account list to the Group Members list.**



The account is added to the group.

- 6 **Activate the Allow E-Mail Access checkbox.**

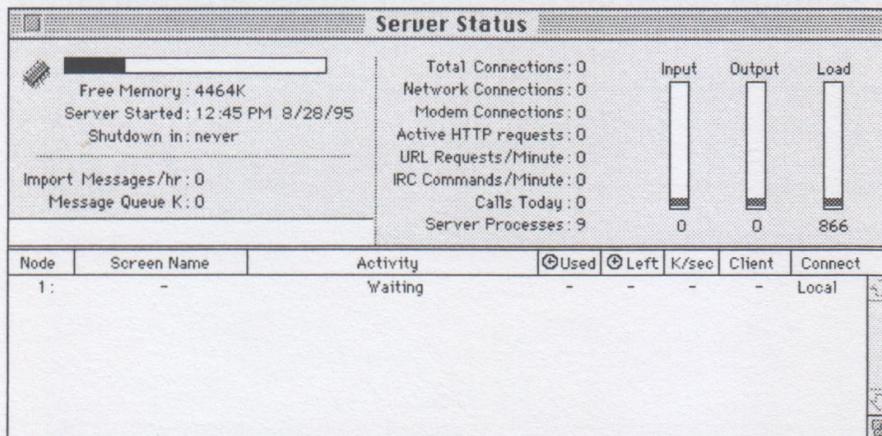
The group record window should appear as shown on the next page.



- 7 Close the group record window by clicking its close box, or by pressing **⌘W**.

THE STATUS WINDOW

The NovaServer Status window (below) lets you keep tabs on the server's operation from one screen. Most NovaServer operators leave this window open at all times so they can see what their server is doing at a glance. To open the Status window, select Status from the Windows menu, or press **⌘S**.



The Status window includes the following vital statistics:

Memory indicator. Shows you how much of its allocated memory your NovaServer is currently using. When not many users are using the server, this bar might be only half full—or less. You may be tempted to lower the server's memory allocation, but we suggest that you don't. Your server may not be using the extra memory at the moment, but it might later use the memory to import messages or to support additional users.

Server startup/shutdown. Shows you when the server was last started and when it is next scheduled to shut down (if a shutdown is pending).

Message import progress. Shows the speed at which NovaServer is importing messages and also tells you how many outgoing messages and transactions are waiting to be transmitted.

Network activity indicators. Shows you how many connections of various types your server is, and has been, processing.

- **Total connections.** Number of users connected right now
- **Network connections.** Number of users connected by AppleTalk or TCP/IP
- **Modem connections.** Number of users connected to serial nodes
- **Active HTTP requests.** How many requests for menus, messages, and other resources the server is currently in the process of filling
- **URL requests/Minute.** How many requests per minute, on average, the server is filling at the moment
- **IRC Commands/Minute.** How many chat messages per minute, on average, the server is handling at the moment
- **Calls today.** Number of calls received today
- **Server processes.** Number of background processes (message import, backup, maintenance, and so on) in progress

Load indicators. Shows you how much of the server's processing power is currently being used for input, output, and other processing. If the bar remains more than two-thirds full for more than a second or two at a time, the server may seem sluggish and unresponsive to users; at this point, you may want to upgrade your server hardware, spread your user load across two or more servers, reduce the priority of importing messages, or reschedule maintenance or backup events.

Node status list. Each node has its own line in the Status window consisting of several status columns. The columns in the status list tell you:

- **Node.** The node number
- **Screen name.** The screen name or handle of the user connected to the node
- **Activity.** What the user is doing or what menu is being viewed
- **Time Used.** How long the user has been online this session
- **Time Left.** How long the user can remain connected (• denotes no limit)
- **K/sec.** Data transfer rate through the node
- **Client.** The type of client which is using the node (Mac and Win indicate the Macintosh and Windows version of NovaTerm, respectively)
- **Connect.** The node's connection type (Local, Serial, TCP/IP, AppleTalk)

CUSTOMIZING
YOUR SERVER

.....



This section includes chapters designed to help you use NovaServer to create the information service you've always dreamed about. These chapters include:

Chapter 4	Creating Your Server's Menu Structure	49
Chapter 5	NovaScript and Custom Menu Design	83
Chapter 6	Enhancing Your Server with NovaScript	101

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CREATING YOUR SERVER'S MENU STRUCTURE

- *In this chapter, you'll learn how to create and modify your server's menu structure.*

MENU EDITOR BASICS

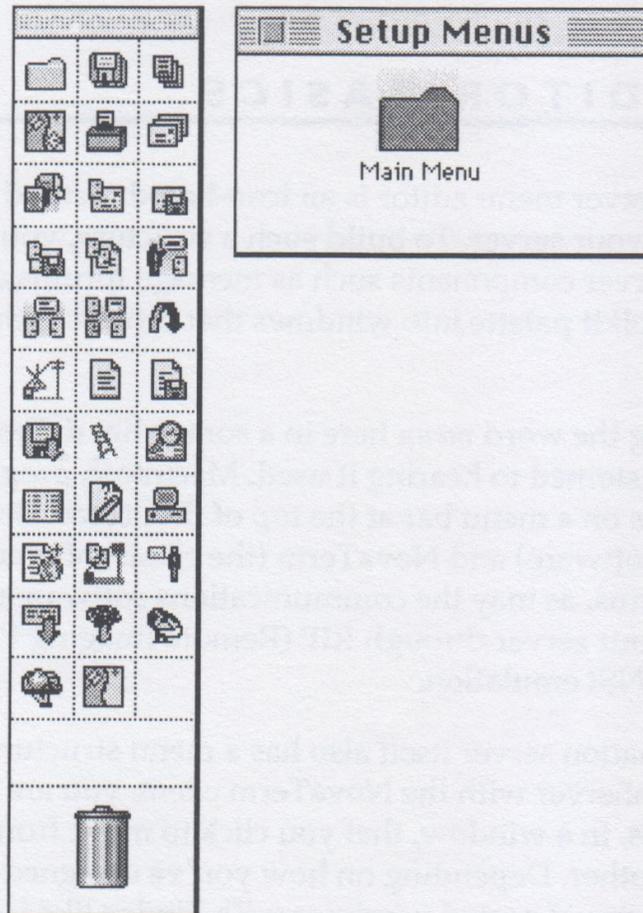
The NovaServer menu editor is an icon-based method of defining the structure of your server. To build such a structure, you drag icons that represent server components such as message forums and file libraries from the Toolkit palette into windows that represent the menus on your server.

We are using the word *menu* here in a somewhat different sense than you may be accustomed to hearing it used. Macintosh programs have pull-down menus on a menu bar at the top of the screen. Both NovaServer (the server software) and NovaTerm (the client software) have these kinds of menus, as may the communications software used by callers who view your server through RIP (Remote Imaging Protocol) or TTY, VT100, or ANSI emulation.

Your information server itself also has a menu structure. When you log on to a NovaServer with the NovaTerm client, you are presented with a set of choices, in a window, that you click to move from one part of the server to another. Depending on how you've designed your server, this is either a series of nested windows with Finder-like icons (NovaView), a HyperCard-like set of screens with buttons (custom graphics), or a set of documents that appear in the NovaTerm World Wide Web browser (HTML). If you log on with a text-based terminal program, you see text-based lists of your choices, and you press keys on your keyboard to select the part of the server you want to visit. All of these are ways to navigate through your server, and represent a menu system you create that is separate from the Macintosh system of pull-down menus.

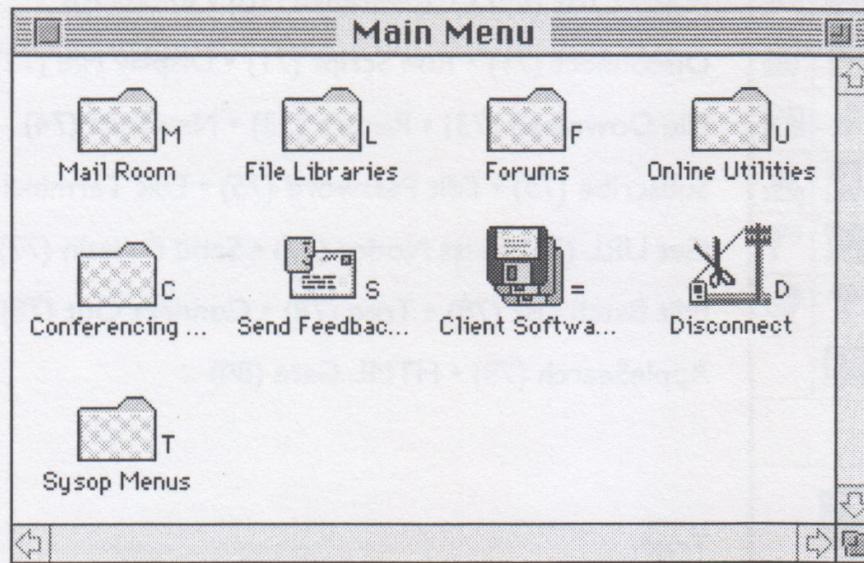
Usually, the kind of menu we're talking about is clear from context. For example, if we tell you to choose Menu from the Setup menu, it means to pull down the Setup menu from the server's menu bar and choose Menu from it. Where there is a chance of confusion, we use the term *pull-down menu* to refer to menus on the Macintosh menu bar. We use the term *Menu component* to refer to the icon that represents a menu you've added to your server (as in "drag a Menu component from the toolbox to the frontmost window").

To open the Menu Editor window, choose Menus from the Setup menu. The Menu Editor (below) appears.



In the NovaServer menu editor, menus are represented by folder icons (like the Finder's, except with the tabs on the other side of the folder). The initial Menu Editor window displays your server's Main Menu.

As in the Finder, you can open a folder by double-clicking it. (You can also click the folder once to select it, then choose Open from the File menu or press **⌘O**.) A new window appears to reveal the contents of the folder. When you open the server's default Main Menu, the screen looks something like the figure below. (The version of NovaServer you received may not have exactly the components shown below in its main menu, but it should look similar.)



EDITING YOUR SERVER'S MENUS

The floating window off by itself, to the left of all the other menu editor windows, is the Toolkit palette. Each icon in the Toolkit represents one type of component (message forum, file library, and so on) that you can add to the server. To see what a particular icon represents, click it once; a reminder appears in the Toolkit palette, above the Trash icon. The illustration on the next page indicates the name of each icon in the Toolkit along with the page number on which you'll find it discussed.



- Menu (57) • File Library (58) • Message Forum (62)
- External (65) • Vote (65) • Send Mail (66)
- Read Mail (66) • Send Feedback (67) • Send Document (68)
- Send Doc Feedback (68) • List Users (69) • Chat Request (69)
- Node Chat (69) • Conference (70) • Jump (70)
- Disconnect (71) • Run Script (71) • Display File (72)
- File Download (73) • Return (73) • NewScan (74)
- Subscribe (75) • Edit Password (75) • Edit Terminal (75)
- Get URL (75) • List Nodes (77) • Send Bulletin (77)
- Edit Batch List (78) • Tree (78) • Connect Out (78)
- AppleSearch (79) • HTML Gate (80)

Trash

Adding components. To add a component to a menu, drag the icon of the type of component you wish to add from the Toolkit into the window representing the menu you wish to add it to. For example, if you wanted to add a message forum to the Main Menu, you would drag a Message Forum component (the top right icon in the palette) into the Main Menu window. A settings window (below) appears, allowing you to name the forum, give it a key equivalent, and change its settings.

Editing "Unnamed 1" Message Forum

Name:

Key:

Read Level:

Access Group:

Write Level:

Moderator Group:

Purge after: days.

All Posts Anonymous Send Post Bulletins

Use Real Names

- NS Files
- Forum Attachments

The settings available depend on what kind of component you're adding. (The settings windows for each of the various components are described later in this chapter.) You can press the Tab key to move from one field to the next, or click directly on the field that you wish to edit.

When you've named the new component, given it a key equivalent, and changed its settings the way you want it, you may close the settings window by clicking the close box at the upper left corner of the window. (Or click Save, or press Return or ⌘W.)

Editing existing components. To edit a component that's already in a menu (to change its name, its key equivalent, or its settings), click the component's icon once to select it, then choose Get Info from the File menu. (Or press ⌘I.) If the component is not a folder, you may also open its settings window by simply double-clicking the component's icon. (If the icon is a folder, double-clicking it opens a new window to display the folder's contents, so you must use Get Info to edit a folder's settings.) By the way, you can edit the name of the Main Menu, if you want to, by clicking the Main Menu icon in the Menu Editor window, then choose Get Info from the File menu.

Moving components from one menu to another. To move an existing component from one menu to a different one, simply open both menu windows by double-clicking the associated folder icons, then drag the icon from one window to the other. (You may also drag a component to a closed folder icon, instead of opening that folder's window, to place it inside that folder.) If you move a folder, you move all of its contents (including any folders inside the folder you're moving, and all their contents, and so on) to the new location, as well.

Deleting components from a menu. To delete a component from the menu, drag it to the Trash icon in the Toolkit palette (not the Trash icon in the Finder). The NovaServer Trash, like the Trash in the Finder, is a holding area for components you wish to delete. Components placed in the Trash are not deleted until you close the menu editor.

Rearranging the order of components in a menu. Components in a menu are displayed in the order they were added. To rearrange them, first create a temporary folder by dragging a Folder icon from the Toolkit to the menu you wish to rearrange. (It is not necessary to name the folder or give it a key equivalent.) Drag each component in the menu into the temporary folder. Then open the temporary folder and drag the components back into the original window in the desired order. Finally, drag the temporary folder to the Trash icon in the Toolkit palette.

- *The order of the icons in a menu is reflected only by the parts of your server's user interface that NovaServer generates. If you plan to produce a full custom user interface for a particular menu, the choices in the menu need not be in the same order as the displayed menu items.*

Closing the menu editor. To close the menu editor, click the close box on the Toolkit palette. All open menu windows are closed and all components in the Trash are deleted. (Closing the Setup Menus window, the window that contains the Main Menu, also closes the menu editor.)

CREATING A LOGICAL MENU STRUCTURE

While NovaServer makes it easy to create and modify your server's menu structure, your task is even simpler if you do a little planning before you start. So, before you actually go any further, you need to ask yourself questions like these:

- Do the services I plan to offer break down logically by subject matter, topic, or other content-based criteria?
- Do I want to divide the services I offer by topic (for example: music, sports, film...) or by resource type (message forums, file libraries...)? Or can I do it both ways in a fashion that makes sense to users?
- What is the maximum number of items I want to put on a menu? (This may be especially important if you're planning a custom graphic user interface.)
- Do I want to have certain items on every menu (for example, a choice that returns the user to the Main Menu from anywhere)?
- What key equivalents do I want to use? (We suggest using E for your Return item, since that's the key that's used to leave the electronic mail, message forum, and file library subsystems, but all the rest are up to you.)
- What, exactly, should be on my Main Menu? A good place to start: include an Electronic Mail menu, a Utilities menu (containing Terminal Settings and Change Password components), a Send Feedback item and a Logoff item. Then add menus for each section of your service.
- Is there something about my proposed design that might confuse users, and if so, how do I fix it?

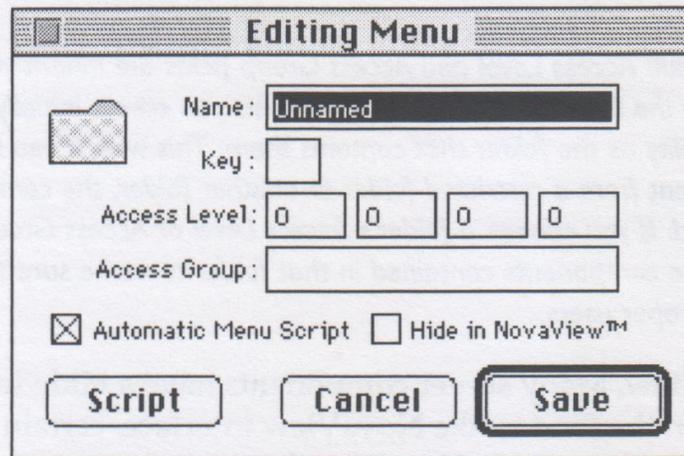
- Am I being consistent? (Don't, for example, use number keys on one menu, and letters on another. Don't call one part of your service a *section* and another part a *division*.)

By answering these questions in before you start, you gain a much clearer idea of where you're headed and how to get there.

Also, remember that every menu (except the Main Menu) needs some way to return to the previous menu. Always include a Return component (the ladder icon) to let users get back to previous menus. (Return components are hidden in NovaView. In NovaView, each menu is a separate window, so the user can simply close the window or bring another menu to the front. However, your text, RIP, and custom graphics users still need some way to get back to the previous menu.)

THE SETTINGS WINDOW

Every icon on your server has a settings window, accessed by selecting the icon and choosing Get Info from the File menu. While the exact contents of the settings window depend on what type of component you're adding, all such windows have several fields in common. We will cover these fields in this section, then move on to the fields specific to each type of component. (Only fields that differ from the fields found in all server components are covered in the sections following this one.)



Name. Every component on your server may be given a name, which can be up to 30 characters long. NovaServer uses the component's name in its automatically-generated text and graphics user interfaces.

Key. It is not necessary to give a component a key equivalent if that menu item is accessible only in NovaView, the Finder-like user interface that NovaServer generates automatically. If, however, you want it to appear in the text menus, or if you plan to create custom graphics for the menu and want that item to be selectable, you must give the menu item a key equivalent. Almost any character can be used, although NovaServer does not distinguish between uppercase and lowercase letters. All the items in a particular menu must use different key equivalents, if they have one.

Access Level. These four fields, taken together, specify the access level a user must have to use the component. If a user's access level is not equal to or greater than the access level specified here, the user cannot see or use the item. Each field in the user's access level must be equal to or greater than the corresponding field in the component's Access Level fields. (See Chapter 7, "Managing Your Accounts," for more information on access levels.)

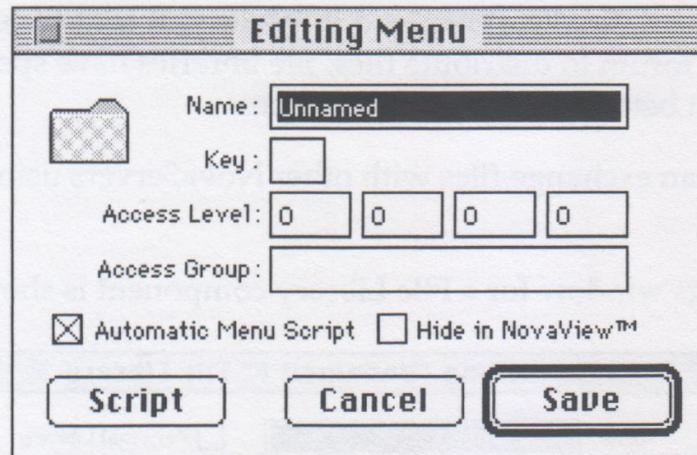
Access Group. Specifies the group that a user must be a member of to use the component. NovaServer allows you to define groups of users and to allow users to access certain areas of the server only if they are a member of a particular group. If this field is left blank, all users with the appropriate access level can see and use the item. Users can access the item if they have high enough access *or* if they are a member of the specified group. (See Chapter 7, "Managing Your Accounts," for information on creating and maintaining groups.) You may type a group or individual account name into this field, or drag it from the Account Records or Group List windows.

- *The default Access Level and Access Group fields are inherited from the parent folder at the time of creation. That is, items you create initially have the same accessibility as the folder that contains them. This way, if you later move a component from a restricted folder to another folder, the component itself is still restricted. If you change a folder's Access Level or Access Group, you should check the components contained in that folder to make sure they are accessible to the proper users.*

Hide in NovaView. Many server components have a Hide In NovaView checkbox. In the Finder-like NovaView interface, certain menu items may be redundant. Since NovaTerm has pull-down menu choices for Send Mail and Read Mail, these functions would be superfluous in a NovaView window. However, you still want to include them so that users who are using your server's text user interface (or some other interface) can read and send mail. The Hide In NovaView checkbox lets you include these components on your server for text users—without cluttering up the NovaView windows.



A Menu component (represented by a folder icon) is a container for other components on the server. Its settings window appears below.



The "Editing Menu" dialog box contains the following fields and controls:

- Name:** A text field containing "Unnamed".
- Key:** An empty text field.
- Access Level:** Four spinners, each set to "0".
- Access Group:** An empty text field.
- Automatic Menu Script:** A checked checkbox.
- Hide in NovaView™:** An unchecked checkbox.
- Buttons:** "Script", "Cancel", and "Save".

Automatic Menu Script. Every Menu component on your server contains a script, written in the NovaScript language, that describes how the menu should be displayed on the caller's screen. If this checkbox is activated, NovaServer automatically generates a menu display script whenever you add, remove, or change a component in the menu. If this checkbox is deactivated, you must write your own script for every type of client (including NovaTerm, VT100, ANSI, TTY, and RIP). We suggest leaving this checkbox activated. You can still write your own scripts to display menus in any format you like—see Chapter 5, "NovaScript and Custom Menu Design," for more information.

Script. Clicking the Script button displays the Menu component's script. Every Menu contains an attached script that describes how the menu should be displayed on the caller's screen. You may edit the script using standard Macintosh text editing methods, including cut and paste. When you're done, close the script by clicking the window's close box or pressing ⌘W. NovaServer asks you if you want to save the script; click Yes or press Return.

- *Using NovaScript to change the appearance of your menus is discussed in more detail in Chapter 5, "NovaScript and Custom Menu Design."*



File libraries hold programs, documents, and other files for distribution to users of your server. Users can search a library by keyword to find the file they're interested in, then read a description of the file, see a preview of the file, and, finally, download it. While you could use attached files in a message forum to distribute files, file libraries have special features that make them better suited to this purpose.

Libraries can exchange files with other NovaServers using the InfoLink protocol.

The settings window for a File Library component is shown below.

Name. Library names must be unique—you cannot have two libraries on your server with the same name.

Download Level. The four Download Level fields control a user's ability to download files from the library in much the same way that the Access Level fields control a user's ability to see and use the library itself. If each field of the user's access level is not equal to or greater than the corresponding field of the File library's Download Level, the user cannot download files, but will be limited to browsing through descriptions and looking at previews.

Upload Level. The four Upload Level fields control a user's ability to upload files to a file library in much the same way that the Access Level fields control a user's ability to see and use the library itself. If each field of the user's access level is not equal to or greater than the corresponding field of the file library's Upload Level, the user cannot upload files to the library. You can use this feature to create read-only file libraries for essential files and utilities, official releases from your staff, and so forth. Only you and your moderators can upload files to such libraries. This functionality is different from the Read-Only checkbox discussed later in this section.

- *Uploaded files are not visible to other users until they have been released by the system operator or a moderator. This allows you or your staff to check each file to make sure it is readable, legal to distribute, and contains no viruses before you make it available to the public. You may disable this feature by turning off the Release New Library Uploads in the General panel of the Server Options (choose Options from the Setup menu).*

Moderator Group. In much the same way that the Access Group field limits who can access a library by requiring the user to be a member of a particular group, the Moderator Group field limits who can delete and release files in the library. Moderators must have high enough access levels to delete messages and files (as defined in the Access Levels panel of the Server Options window—choose Options from the Setup menu) *or* be a member of the specified moderator group. The Moderator Group field allows you to have several moderators on your server, each with responsibility for moderating a specific area—giving you the ability to limit the scope of their power to the areas that they're specifically responsible for. (See Chapter 7, "Managing Your Accounts," for information on creating and maintaining groups.) You may type a group or individual account name into this field, or drag it from the Account Records or Group List windows.

Personal Library. If the Personal Library checkbox is activated, the library allows users to see only files they uploaded themselves, effectively making the library look to each individual user as if it is being used only by them. (The system operator and moderators can see all files in the library, regardless of who uploaded them.)

Read-Only. Prohibits uploads to the library, even by the system operator or moderators. Activate this checkbox if the library's files reside on a drive that cannot be written to (such as a CD-ROM drive) or if you want to freeze a library in its current state. Read-Only Libraries are ignored during a NewScan.

Self-Maintaining. Relieves the system operator of some of the drudgery of uploading individual files to the library. If a library is self-maintaining, someone with physical access to the server can simply place new files in the library's folder (specified with the Folder button), and they are automatically added to the library listing. (If the files are StuffIt archives with comments attached, the comments are imported as the files' descriptions.) If a file is removed from the folder, it is removed from the library listing. Files in self-maintaining libraries do not need to be released before users can download them, making this feature perfect for CD-ROM file collections.

Audit Uploads & Downloads. If one of these checkboxes is activated, NovaServer writes a tab-delimited log of all the files uploaded to or downloaded from the library into the NS Logs folder. The name of the log file is the name of the library with *.up* or *.down* appended (for example, MacUtilities.down). These logging capabilities are useful if you plan to charge users a per-download fee.

- *Logs can also be stored on an ODBC-compliant database server, such as Butler, by activating the Use ODBC Database checkbox in the Log Options panel of the Server Options. To open the Server Options window, choose Options from the Setup menu.*

Ignore Download Limits. Allows you to exempt this library from the download limits set in the user's account record. For example, if you normally allow users to download 1 MB per day, you might want to exclude downloads from a library of vital utilities—files users need to use the other files on your server.

Downloader must average... Allows you to specify how actively a caller must participate in your server's file libraries (uploading) or message forums (posting articles) before he or she can download files from this library. You might use this feature if you were running a free community server to ensure that your best file libraries are accessible only to people who contribute to the server's growth, and to prevent users from logging on simply to download files without paying.

Uploading disabled after... Specifies the maximum size of the library in kilobytes. When the total size of all the files in the library reaches or exceeds this amount, no more uploads are permitted.

Folder. Determines where NovaServer stores the files for this library. (The path to the folder is shown above the Folder button.) This setting does not determine where the file descriptions are stored—descriptions are always stored in files inside the NS File Libraries folder, one file for each library—but where the files themselves are stored. The default is to store library files in the NS Files folder, and libraries can even share this folder if they're not self-maintaining. However, for ease of maintenance, we suggest that you create a separate folder inside the NS Files folder for each library, then use the Folder button to select that folder for that library's file storage. You can use the New Folder option on the Finder's File menu to create new folders.

Network. The Network button opens the library's InfoLink Setup window, where you can configure the exchange of library files with other servers. This function is covered in detail in Chapter 11, "Networking with InfoLink."

Picture Previews. NovaServer lets you attach a picture preview, viewable by NovaTerm users, to any file in a library. If the library file is a PICT file, NovaServer generates the preview image automatically.

If the file is an archive created with Compact Pro™ or StuffIt,™ NovaServer looks for a PICT resource with ID 128 inside the archive and uses this image as the preview. Ideally, this picture should be 85 by 115 pixels, but NovaTerm will scale the image if it is a different size. (You will get a better preview by using Photoshop™ or another image editing program to scale the image, however, since you will be able to control the aspect ratio of the preview better.)

To provide picture previews for other kinds of files, use ResEdit to create a resource file in the NS File Libraries folder. The name of this file must match the file library's name but have .PICT appended. For instance, if you have a library named Fruit, create a file called Fruit.PICT in the NS File Libraries folder. Then, again with ResEdit, add a PICT resource for each file for which you want to provide a preview. Give the resource the same name as the file it is a preview for. (The resource ID is irrelevant, since NovaServer will retrieve the resource by name, not ID.)



Message forums are containers for messages posted by users of your server. Users can post a new message to ask a question or make a statement, or they can reply to an existing message to continue a discussion. The replies to each message are kept in a *thread*. Since several exchanges may be going on at once, threading together messages with the same topic allows users to easily find and keep up with the discussions they're interested in. When a user opens a message forum, they are shown a list of all current threads and offered the opportunity to read one, reply to one, or start a new one.

Messages may have attached files, and forums can exchange messages with other NovaServers (using InfoLink) and, optionally, with Usenet newsgroups (using NNTP).

The settings window for a Message Forum component is shown on the next page.

Editing "Unnamed 1" Message Forum

Name:

Key:

Read Level:

Access Group:

Write Level:

Moderator Group:

Purge after: days.

All Posts Anonymous Send Post Bulletins

Use Real Names

Folder Network

Cancel Save

Name. If you are setting up a forum that exchanges messages with a Usenet newsgroup, you must use the exact name of the newsgroup as it appears on Usenet (such as comp.sys.mac.misc). (If the Usenet newsgroup's name is longer than thirty characters, use the last thirty characters of the newsgroup's name.) Message forum names must be unique—you cannot have two forums on your server with the same name.

Read Level. This is another name for the Access Level fields that appear in most server components. It controls whether a user can read messages in the forum. (See "The Settings Window," earlier in this chapter, for more information on the Access Level fields.)

Write Level. The four Write Level fields control a user's ability to post messages to a message forum in much the same way that the Read Level fields control a user's ability to see and use the message forum. If each field of the user's access level is not equal to or greater than the corresponding field of the message forum's Write Level, the user cannot post new messages to the forum. You can use this feature to create read-only message forums for help messages, bulletins from the system operator, and so forth. Only you and your moderators can post messages to such forums.

Moderator Group. In much the same way that the Access Group field limits who can read a forum by requiring the user to be a member of a particular group, the Moderator Group field limits who can delete messages and release files in the forum. Moderators must have high enough access levels to delete messages and files (as defined in the Access Levels panel of the Server Options window—choose Options from the Setup menu) *or* be a member of the specified moderator group. The Moderator Group field allows you to have several moderators, or groups of moderators, on your server, each with responsibility for moderating a specific area—giving you the ability to limit the scope of their power to the areas that they're specifically responsible for. (See Chapter 7, "Managing Your Accounts," for information on creating and maintaining groups.) You may type a group or individual account name into this field, or drag it from the Account Records or Group List windows.

Purge After. Determines how many days messages stay in the forum before they're deleted. Placing a zero in this field allows messages to remain in the forum until they are specifically deleted by the system operator or a moderator (appropriate for forums containing messages posted by the system operator or moderators, such as help files or message archives). The default value of 30 days is appropriate for most uses; however, you may want to decrease it to 7 days or even lower if you are receiving high-traffic Usenet newsgroups and are concerned about how much disk space these messages require.

List New First. Determines whether messages and threads are displayed in ascending (oldest first) or descending (newest first) date order. Users who access your server using the NovaTerm client software have a preferences setting that allows them to view messages in either order, regardless of the setting of this checkbox, so this setting applies only to text-mode (TTY, VT100, ANSI) and RIP callers.

Send Post Bulletins. Determines whether online users are notified when a new message is posted to the forum. In most forums, you should leave this checkbox deactivated; however, if you have a News or Announcements forum for messages from the system operator, you might want to enable it there.

All Posts Anonymous. If activated, messages are posted anonymously, that is, without recording the name or account ID of the posting user. This checkbox should usually be deactivated for a forum that is exchanging messages with a Usenet newsgroup, since, in general, Usenet readers frown upon anonymous messages. You may, however, want to enable it for a Comments forum so that users can feel free to post honest feedback. (There is no way for a system operator or moderator to find out who posted a particular anonymous message, unless someone happens to be monitoring the server as the message is being composed.)

Use Real Names. If activated, NovaServer tags new messages with the real name of the posting user (stored in the first and last name fields of the user's account record). Otherwise, the user's handle or screen name is used.

Folder. Determines where NovaServer stores attached files for this forum. (The path to the folder is shown above the Folder button.) This setting does not determine where the messages themselves are stored—messages are always stored in files inside the NS Forums folder, one file for each forum—but where files attached to the forum's messages are stored. The default is to store attached files in a folder called Forum Attachments in the NS Files folder. Any number of forums can store attached files in the same folder; NovaServer automatically renames attached files so that duplicate filenames are not generated. The default folder, Forum Attachments, is acceptable for most configurations, since most systems don't use attached files heavily.

- *Attached files are not visible to other users until they have been released by the system operator or a moderator. This allows you or your staff to check each file to make sure it is readable, legal to distribute, and contains no viruses before making it available to the public. You may disable this feature by deactivating the Release New Library Uploads checkbox in the General panel of the Server Options (choose Options from the Setup menu).*

Network. The Network button opens the forum's InfoLink Setup window, where you can configure the exchange of forum messages and attachments with other servers. This function is covered in detail in Chapter 11, "Networking with InfoLink" and Chapter 12, "Networking with the Internet."

EXTERNAL



Externals are small programs that run inside NovaServer to provide additional features. (A programming reference for creating your own externals is included with the full NovaServer installation.) Externals can be activated from a menu, from a script, by an event, or by a hotlink in an HTML document. The External icon in the Toolkit palette is how you activate an external from a menu.

The settings window for Externals is shown below.

The screenshot shows a dialog box titled "Editing External". It contains the following elements:

- Name:** A text field containing "Unnamed".
- Key:** An empty text field.
- Access Level:** Four small input boxes, each containing the number "0".
- Access Group:** An empty text field.
- File Path:** A large rectangular box on the right side, currently empty, with a scroll bar on its right edge.
- Hide in NovaView™:** A checkbox at the bottom left, which is currently unchecked.
- Buttons:** Three buttons at the bottom right: "File", "Cancel", and "Save".

File. Clicking the File button displays a standard Open dialog to select the NovaServer External to be run when the user chooses this component from your menu. The complete path to the External is displayed in the rectangular box on the right side of the window. Externals are stored in the NS Externals folder.

VOTE



Vote topics are useful for conducting surveys, serious or frivolous, of your users. Each Vote topic asks one question and provides up to 10 responses. After the user has answered the question, the current results are tabulated and displayed. Users are prevented from answering the same question twice (the second and subsequent times a user opens the Vote topic, only the results are displayed). If you change an existing Vote topic, however, all existing responses are thrown out and the tally is wiped clean—no fair changing the slate halfway through the polling!

The settings window for Vote topics is shown on the next page.

Editing Vote

Printer icon

Name:

Key:

Access Level:

Access Group:

Vote Question:

Responses:

1. 6.

2. 7.

3. 8.

4. 9.

5. 10.

Vote Question. Enter your question here. The question can be somewhat longer than the size of the field might imply—the text you enter scrolls horizontally to make more room.

Responses. Enter up to ten responses. The response fields scroll horizontally to allow you to enter responses that are wider than the field.

SEND MAIL

The Send Mail component allows your users to write mail to any user on your server, or even to users on other NovaServers or the Internet. When a user selects a Send Mail component, the user is presented with a blank electronic mail form (with the NovaTerm client software) or prompted for an electronic mail address and subject before being placed into the NovaServer text editor (in text or RIP mode).

READ MAIL

The Read Mail component opens and displays the user's mailbox. From there, the user can read, forward, delete, and reply to messages.

SEND FEEDBACK



The Send Feedback component opens a preaddressed electronic mail form, allowing your users to write to a specific user or group without having to know the full electronic mail address. While the usual purpose of Send Feedback is to give your users an easy way to send comments and suggestions to the system operator, you can, in fact, set up as many Send Feedback components as you care to, each to a different address. For example, to allow your users to write to the President of the United States with a single menu selection, you might set up a Send Feedback component with a Send To of `president@whitehouse.gov`.

The settings window for Send Feedback is shown below.

Edit Send Feedback

Name:

Key:

Access Level:

Access Group:

Send to:

Hide in NovaView™

Send to. Enter the electronic mail address of the person you want users to send a pre-addressed message to in the Send To field. You may use the account name of a user or group on this server, or on another NovaServer you're connected to through InfoLink (using the form `User Name/Site Name`, with a slash between the user name and the site name), or on the Internet (use the standard Internet address format, `user@host`).

SEND DOCUMENT



The Send Document component allows a user to send an electronic mail message with an attached file. If the user is calling with the NovaTerm client software and viewing the menu with the Finder-like NovaView user interface, this component is hidden, because the standard NovaTerm mail form has a button for attaching a file. However, to support callers with text-based or RIP terminals, you should include a Send Document component on your server.

SEND DOC FEEDBACK



The Send Doc Feedback component is a close relative of both Send Feedback and Send Document. It allows users to send an electronic letter with an attached file to a preconfigured address. For example, if you run a service bureau and would like to offer your users an easy way to submit small print jobs electronically, you might set up a Send Document Feedback that sends the attached file to an account called Print Jobs. As with Send Document, Send Document Feedback differs from Send Feedback only if the caller is not using the NovaTerm client software, because the standard mail form in NovaTerm includes an Attach button for sending files through electronic mail.

The settings window for Send Document Feedback is shown below.

Edit Send Doc. Feedback

Name:

Key:

Access Level:

Access Group:

Send to:

Hide in NovaView™

Send to. Enter the electronic mail address of the person you want users to send a pre-addressed attached-file message to in the Send To field. You may use the account name of a user or group on this server, or on another NovaServer you're connected to through InfoLink (using the form User Name/Site Name, with a slash between the user name and the site name), or on the Internet (use the standard Internet address format).

LIST USERS



When the caller selects a List Users component, a list of all users on the server is displayed, including their location and computer type, if applicable.

CHAT REQUEST

Not Available in NovaTerm 

The Chat Request component allows a caller to request a chat with the system operator, or anyone who is physically close to the server itself. This component cannot be used to initiate a chat with a user on another node, even if that user is the system operator. If the Sysop Available menu item on the Terminal menu is not checked, the request is rejected; otherwise, the system operator is paged with a beep.

To answer a chat request, choose the node requesting the chat from the Windows menu (it has an asterisk in front of its name), then choose Chat from the Terminal menu. Doing so begins an interactive chat session that allows both you and your caller to type messages to each other. To end the chat session, choose Chat from the Terminal menu again.

Chat request is not available to NovaTerm callers, only to text-mode and RIP callers.

NODE CHAT



When callers select Node Chat, they are prompted for a name for the new chat room to be created. This name serves as the password for the room—only those who know the full name of the room can access it. Other than the fact that the room name is not publicly available, a Node Chat room is exactly the same as Conference room. Callers who are using the NovaTerm client software may select the Node Chat component any number of times and participate in any number of rooms simultaneously.

Users of Node Chat operate in a split-screen mode. In NovaTerm, they enter their messages into a field at the top of the window, while viewing others' messages at the bottom. Text-based or RIP graphics clients see a simulated chat window that provides similar functionality.

CONFERENCE



Conference rooms are public chat areas. Each Conference icon represents a separate conference room. The fact that the room name is publicly available, allowing anyone to join, is the main difference between a Conference room and a Node Chat room. Other than that, the two types of areas behave very similarly.

Users of Conference rooms operate in a split-screen mode. In NovaTerm, they enter their messages into a field at the top of the window, while viewing others' messages at the bottom. Text-based or RIP graphics clients see a simulated chat window that provides similar functionality.

JUMP

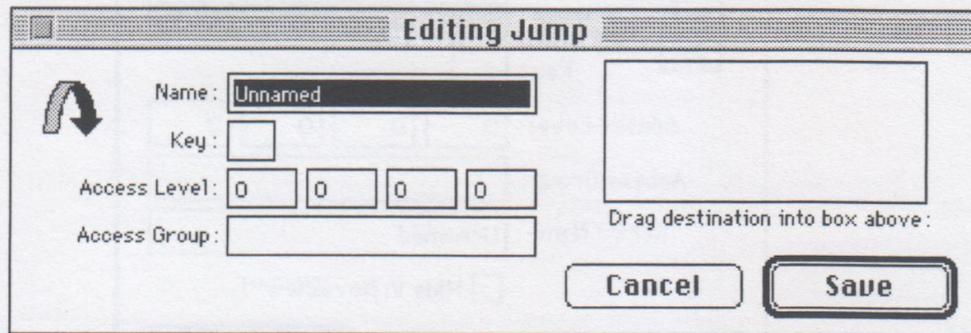


The Jump component is a navigational aid you can employ to help users find their way around large or complicated servers. It allows you to provide a direct pathway from one part of your server to another, so that users don't have to take the time to exit from a long string of menus, only to follow a different path down just as many menus. One of the most useful things you can add to your server is a Jump on every menu that returns users to your server's Main Menu.

Jump can be used to transport users to not only another menu, but also to a message forum, file library, or any other server component, but we suggest using Jump only to jump to other menus. If you jump to a component besides a menu, users may not be where they expect to be when they exit the item they jumped to. They'll be taken to the menu that *contains* the item that was jumped to, rather than to the last menu they last saw before they made the jump. This means that a Jump item cannot be used to put a message forum or file library in two different menus. (The Get URL item is more appropriate for this function.)

Since the NovaView icon-based user interface allows users to keep menus you've already visited open, thus letting them directly select the menu they want by bringing that window to the front, Jump components are hidden in NovaView.

The settings window for Jump is shown below.



The screenshot shows a window titled "Editing Jump". On the left side, there is a curved arrow icon. Below it, the "Name" field contains "Unnamed". The "Key" field is empty. The "Access Level" field consists of four individual boxes, each containing the number "0". The "Access Group" field is empty. On the right side, there is a large empty rectangular box with the text "Drag destination into box above:" below it. At the bottom of the window, there are two buttons: "Cancel" and "Save".

Destination. Specify the destination of the Jump component by dragging the original component's icon into the box on the right side of the window.

DISCONNECT



The Disconnect component first asks users if they're certain they want to disconnect from the server, then closes the connection. Since the NovaTerm client software has a choice in its Server pull-down menu to disconnect from the server, this component is automatically hidden when using the Finder-like NovaView user interface.

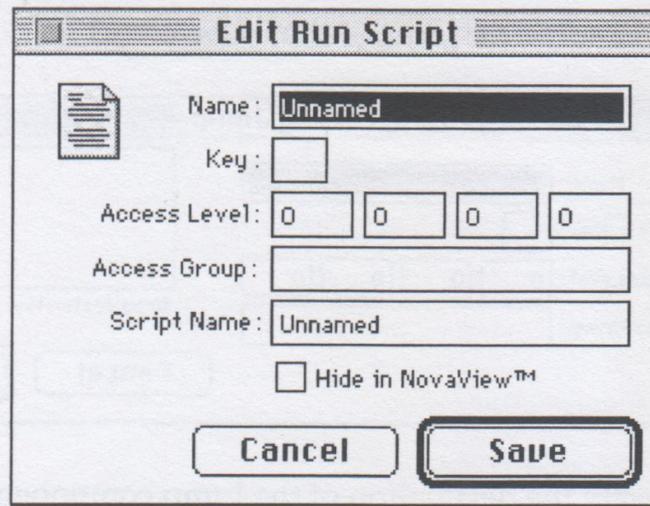
RUN SCRIPT



The Run Script component executes a NovaScript script. NovaScript is a simple interpreted scripting language designed to facilitate the conditional display of information based on the user's access level, the number of times the user has called, the client software the user is accessing the server with, and other factors. NovaScript is described in more detail in Chapter 6, "Enhancing Your Server with NovaScript," and in Chapter 16, "NovaScript Reference."

Before you can add a Run Script component to your server, you must first create the script. To open the script list and create a new script, choose Scripts from the Setup menu.

The settings window for Run Script is shown on the next page.

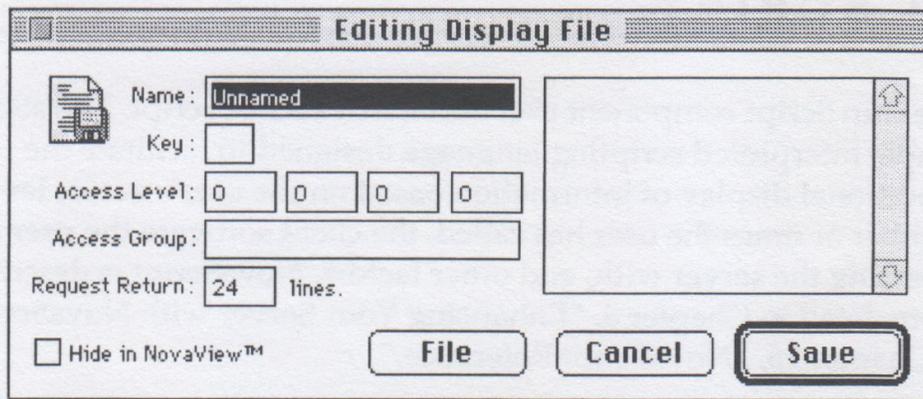


Script Name. The name of the script to be executed when the user selects this component, as it appears in the NovaServer script list.

DISPLAY FILE

A Display File component displays a text file on the user's screen. For NovaTerm users, the file may be an HTML document—see Chapter 16, "HTML Reference," for more information on creating HTML documents.

The settings window for Display File is shown below.



File. Click the File button to specify the file to be displayed, using a standard Open dialog.

DOWNLOAD FILE



A Download File component sends a single file to the user. If the user is running the NovaTerm client software, the download begins automatically; otherwise, the user is prompted to select a file transfer method and to begin the download on his terminal software. You may find Download File convenient when you need to make a file (such as the latest client software, or some other important program) available to users with a minimum of hassle. A single menu selection begins transferring the file without even opening a library.

The settings window for Download File is shown below.

Editing Display File

Name:

Key:

Access Level:

Access Group:

Request Return: lines.

Hide in NovaView™

File. Click the File button to specify the file to be sent to the user, using a standard Open dialog.

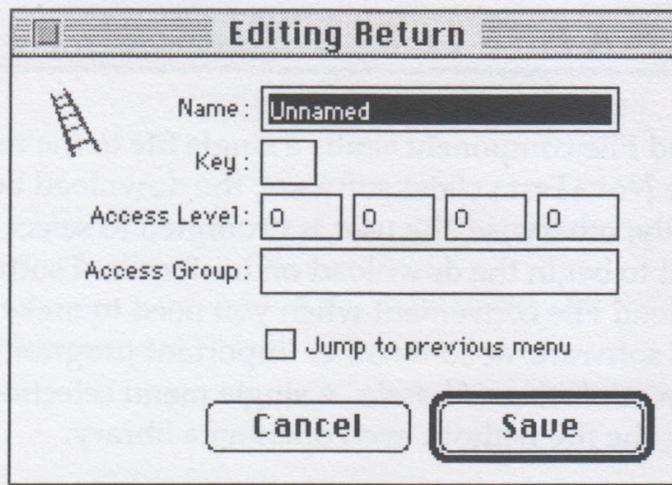
RETURN



Every menu on your server (except the Main Menu) should have a Return component in it to allow users to navigate to the previous menu.

Which menu, exactly, is the previous menu? In some cases it's convenient to think of the menu that contains the current menu (the parent of the current menu) as the previous menu. In other cases, particularly when you're dealing with a menu that's accessed from more than one place with Jumps, it might make more sense to think of the previous menu as the menu the user saw before this one, even if it's not the parent of the current menu. NovaServer lets you have it either way.

The settings window for Return is shown on the next page.



Editing Return

Name:

Key:

Access Level:

Access Group:

Jump to previous menu

Jump to previous menu. Determines where this Return component exits to. If this checkbox is deactivated, Return takes the user to the parent menu of the menu containing the Return component. If it is activated, the user is returned to the menu they were using before they came to the current menu, even if it wasn't the parent menu.

NEWS CAN



NewScan is a shortcut that allows a user to see what's new on a server, or in part of a server, without having to visit each message forum and file library. When NewScan is activated, it presents a list of all the new messages and files within the current menu and all its submenus. Thus, the scope of the NewScan is determined by where, in the server's menu structure, you place it. A NewScan placed on your server's Main Menu scans the whole server. A NewScan placed three menus deep scans only the message forums and file libraries on that menu and its submenus. NewScan respects the access levels and groups of every forum and library it scans, so areas users can't access never appear on the list.

SUBSCRIBE



A companion to NewScan, the Subscribe component allows your users to determine which file libraries and message forums they want to see in their NewScan. Like NewScan, Subscribe is limited in scope to the bulletin boards and Message forums in the current menu and its submenus. However, each user has only one set of subscriptions—if a user unsubscribes from a certain Message forum with a Subscribe component several menus deep in your server's structure, that forum would also be unsubscribed for a NewScan the user performed from the server's main menu.

EDIT PASSWORD



The Edit Password component allows the user to change his or her own password. Users are asked for their current password before being allowed to choose a new one. You should encourage your users to change their passwords on a monthly (or even more frequent) basis, and to not use the same password on other systems they call.

EDIT TERM

Not available in NovaTerm 

The Edit Term component allows text-mode users to change their terminal settings to match their software. Editable parameters include terminal type, default transfer protocol, character set, number of columns, line feeds, destructive backspace, beginner mode, hot menus, and logon/logoff notify. This component is hidden in NovaView, the default Finder-like user interface in the NovaTerm client software.

GET URL

Available only in NovaTerm 

A URL is a Uniform Resource Locator, the World Wide Web standard method of naming the location of a resource on the Internet. NovaServer uses URLs internally to identify the locations of resources on the server, as well as to identify Web pages on the Internet. You can use the Get URL component to pull up a Message forum, file library, HTML document, or other resource from your own NovaServer, and, if you have licensed the NovaServer World Wide Web option, pages from the Internet.

Resources on your NovaServer can be accessed with URLs in the following formats:

<code>http://*/library/libraryname</code>	opens file library
<code>http://*/news/forumname</code>	opens message forum
<code>http://*/mail/*/</code>	opens caller's mailbox
<code>http://*/file/filename</code>	opens document inside HTML Files
<code>http://*/external/externalname</code>	runs HTML external
<code>http://*/design/refnumber</code>	opens a design element by reference number
<code>interact://*/external/extname</code>	opens I/O window and runs text external
<code>interact://*/script/scriptname</code>	opens I/O window and runs script

To find out a server component's design reference number, watch the NovaTerm History window as you access the desired element. The full URL, in the `http://*/design/#` format, is displayed and may be copied to the clipboard. The Main Menu's reference number is always 17; other elements' reference numbers are assigned at random as you build your server's menu structure.

- *If you have licensed the Web Out option, you may also use any World Wide Web URL which begins with `http`.*

For more information on HTML and URLs as supported by NovaServer, see Chapter 16, "HTML Reference."

The settings window for Get URL is shown below.

The screenshot shows a dialog box titled "Editing Get URL". It contains the following fields and controls:

- Name:** A text box containing "Unnamed".
- Key:** An empty text box.
- Access Level:** Four small input boxes, each containing the number "0".
- Access Group:** An empty text box.
- Get URL:** A large empty text box.
- NovaView Icon:** A dropdown menu currently showing "Document".
- Buttons:** "Cancel" and "Save" buttons at the bottom right.

Get URL. Enter the URL to be opened in this field.

NovaView Icon. Since a Get URL component can refer to many different types of resources, you may choose the icon (message forum, file library, or document) you want to appear on the Get URL component in NovaView, the Finder-like user interface in the NovaTerm client software.

LIST NODES



The List Nodes component displays a list of all the users currently logged on to your NovaServer.

SEND BULLETIN



The Send Bulletin component allows a user connected to one node of your NovaServer to send a short message to a user connected to a different node. Usually this is used to ask the other user to check their mailbox, or to meet in a certain conference or chat room. The message is displayed in the NovaTerm status window if the user is connected with NovaTerm; otherwise the message may interrupt whatever activity the user is engaged in. (Text-mode users can disable the interruptions by specifying No-Bother Mode in their terminal settings.)

EDIT BATCH LIST

Not available in NovaTerm



The Zmodem protocol supports the unattended download of multiple files (batches), and users may add files to their batch from any library, then download them with one command, without further user intervention for each file. The Edit Batch List component allows text-mode users to modify their Zmodem file batch list.



Inside the server, your menu system is represented in a data structure known as a tree. Normally, you won't need direct access to the tree, but it is useful for remote maintenance and operation. We suggest, therefore, that you add a Tree component to your server's menu structure. Be sure to give it an access level that allows only trusted individuals to use it—anyone with access to the Tree can do virtually anything you can do sitting right in front of the server, albeit not quite as easily.

CONNECT OUT



If you have licensed the NovaServer Telnet option, you can use the Connect Out component to allow your users to initiate a telnet session to a remote Internet host. (The NovaTerm client software has a built-in VT100 emulation module that allows text-based services to be used without leaving NovaTerm, as do most RIP-compatible clients. Of course, if the caller is using VT100 or ANSI to access your server in the first place, they already have a text mode that works with most telnet services.)

The settings window for a Connect Out component is shown below.

Connect to. The Internet address of the remote host. This can be either a numeric address (for example, 204.74.76.11) or a host name (novacentral.resnova.com). (The latter form requires domain name service or a properly configured Hosts file.) If you leave this field blank, users are prompted for the host's address.



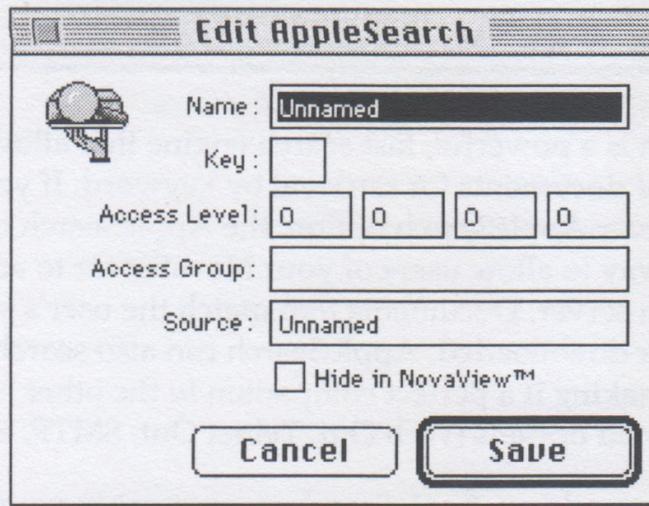
AppleSearch is a powerful, fast search engine that allows you to index collections of documents for retrieval by keyword. If you have licensed the NovaServer AppleSearch option, the AppleSearch component provides a way to allow users of your NovaServer to access a separate AppleSearch server. Documents that match the user's search terms can be viewed or downloaded. AppleSearch can also search Internet WAIS databases, making it a perfect companion to the other NovaServer Internet-related options (Web Out, Telnet Out, SMTP, and NNTP).

Before you can add an AppleSearch component to your server, you must first set up the AppleSearch server according to the documentation provided with it. For best performance, we recommend running the AppleSearch server on a separate machine from your NovaServer. Set up an account for NovaServer to log on to the AppleSearch server and install the AppleSearch client software on the machine running NovaServer. (Although NovaServer and AppleSearch are both servers, NovaServer acts as an AppleSearch client, so it needs client software, and an account on the AppleSearch server.) Many users can use a single AppleSearch server through this single account, so you don't need multiple AppleSearch client licenses unless you are running a multi-machine NovaServer virtual server.

You should set up Info Sources on your AppleSearch server to contain the documents and WAIS servers you want to search. Make sure the AppleSearch account you created for NovaServer has access to all the sources you want users of your server to be able to search. (If you want to restrict some sources to certain users, you can set up multiple AppleSearch components on your NovaServer and use NovaServer's security features to ensure that users don't have access to sources you don't want them to use.)

You must also enable AppleSearch in the General panel of NovaServer's Server Options window. (Choose Options from the Setup menu to open the Server Options window.) Once that is done, you are ready to install and configure your AppleSearch components.

The settings window for AppleSearch is shown on the next page.



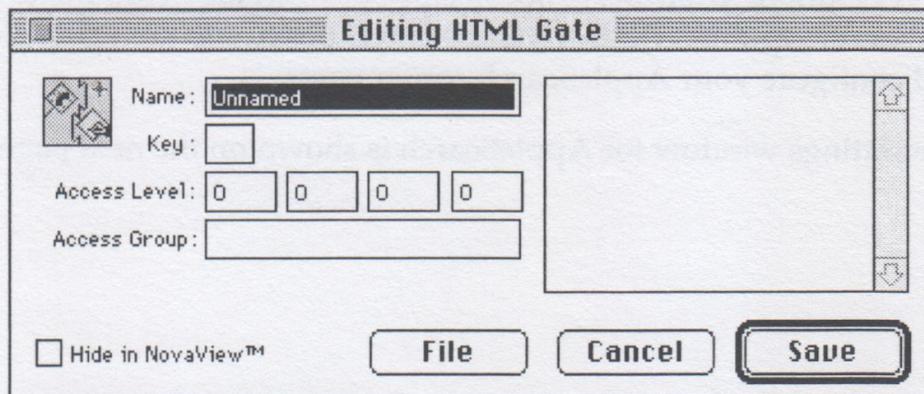
Source. Defines the name of the Info Source on the AppleSearch server that this particular component searches. You can set up as many AppleSearch components as you like on your NovaServer, each accessing a different Info Source on the AppleSearch server.

HTML GATE

Available only in NovaTerm 

The HTML Gate component is a special type of external that is designed to work with HTML documents. Externals are small programs that run inside NovaServer to provide additional features. (A programming reference for creating your own externals is included with the full NovaServer installation.) HTML Gate externals are similar to CGI (Common Gateway Interface) scripts on World Wide Web servers and can be activated by a hotlink in an HTML document. The HTML Gate icon in the Toolkit palette allows you to activate an HTML Gate external from a menu as well; the external's output must be HTML and is displayed in the NovaTerm browser.

The settings window for HTML Gate is shown below.



File. Clicking this button displays a standard Open dialog to select the external to be run when the user chooses this component from your menu. The complete path to the external is displayed in the rectangular box on the right side of the window.

SERVER COMPONENT MINI-INDEX

AppleSearch	79	List Users	69
Chat Request	69	Menu	57
Conenct Out	78	Message Forum	62
Conference.....	70	NewScan.....	74
Disconnect	71	Node Chat	69
Display File.....	72	Read Mail	66
Download File.....	73	Return	73
Edit Batch List	77	Run Script.....	71
Edit Password	75	Send Bulletin.....	77
Edit Term	75	Send Doc Feedback	68
External	65	Send Document	68
File Library	58	Send Feedback	67
Get URL	75	Send Mail	66
HTML Gate.....	80	Subscribe	75
Jump	70	Tree	78
List Nodes.....	77	Vote	65

NOVASCRIPT & CUSTOM MENU DESIGN

- *In this chapter, you'll learn how to use NovaScript to create your own custom menu designs for NovaTerm, RIP, ANSI, VT100, and TTY callers.*

ABOUT NOVATERM

NovaTerm is a client software package, available for both Macintosh and Windows computers, that provides users of your server with a friendly point-and-click user interface. At the same time, it supports several different cross-platform methods of customizing your server's appearance at the caller's end. Since the NovaTerm software is essentially the same on both Macintosh and Windows machines, you need develop only one custom user interface to support both types of callers.

Callers can also use any telecommunications program that supports RIP (Remote Imaging Protocol) graphics, or ANSI, VT100, or TTY text emulations. All of these protocols give you room to express yourself and to give your server a unique look and feel. Some system operators focus primarily on the NovaTerm user interface, because it's more popular, more powerful, and more flexible than the other methods.

The popularity arises from the explosive growth of graphically-oriented online services such as Prodigy[®] and America Online[®]. The power comes from NovaTerm's ability to open multiple windows, letting users monitor more than one part of the service simultaneously. (NovaTerm users can even download files while continuing to read messages.) And the flexibility comes from the tools NovaServer, working in concert with NovaTerm, gives you to assist you in building your user interface.

These tools include:

- **NovaView**, NovaTerm's default user interface, which is automatically generated for each menu in your server by NovaServer. NovaView presents your server's information content in a series of windows much like the Macintosh Finder and ensures that your server is attractively presented, even if you don't have the time to build a custom user interface.
- **Custom Graphics**, a way of creating clickable full-screen graphic menus similar to what you might create in HyperCard. Graphics are downloaded to the user on an as-needed basis, so you don't have to worry about designing graphics in advance for new areas you haven't even thought of yet, or sending the user a huge configuration file with all your graphics.
- **Integrated HTML Browser**, which works together with NovaServer URLs to let you create Web-like documents with hotlinks to other resources on your server. You could create an entire user interface using nothing but HTML documents, if that's what you wanted to do.
- **VT-100 Emulation**, which allows you to display a variety of colorful text-based user interfaces within a NovaTerm window. While text isn't as attractive as graphics, it does have its advantages—you can change it in seconds, and it can be transmitted very quickly to the user.
- **WindowScript**, an advanced feature that allows you to design your own window appearances, even re-designing NovaTerm's standard windows if you like. The version of WindowScript supported by the current version of NovaTerm is a beta release that was recently submitted to the Internet Engineering Task Force (IETF) for consideration as an Internet standard. It is likely to undergo many changes before being finalized. For this reason, no WindowScript documentation is included in this manual. Current beta documentation is available on NovaCentral, the NovaServer support server, and may be incorporated into this manual after WindowScript has been finalized.

Best of all, NovaTerm gives you the flexibility to use any or all of these user interface tools in your server, mixing and matching them as you feel appropriate. You might design your Main Menu as a custom graphic page; you might design your Newsgroups menu as a HTML document; you might choose to use NovaView to display your Voting menu. It's easy with NovaServer.

THE SERVICE FILE

NovaTerm stores a copy of all the custom graphics, sounds, and other resources used by a particular server in a *service file*. (See the *NovaTerm User Guide* for more information on service files.) When NovaTerm needs to display a graphic it doesn't already have, it requests the file from the server "on the fly." NovaServer retrieves the file from the HTML Files folder (inside the NS Files folder) and transparently sends it to NovaTerm. The user notices nothing but a slight delay in the menu's first appearance. The graphic is then stored in the service file so it can be retrieved instantly the next time it's needed.

You can force graphics that a client doesn't already have to be downloaded at logon, instead of as they're needed, by adding a line like the following to the `CheckVersion` template, a text file inside the Templates folder, which is inside the NS Files folder (*do not* put a space after the colon):

```
image:MainMenu
```

You may also create a pre-configured service file containing some or all of the graphics your server needs by signing on to your server with NovaTerm and visiting the areas for which you want to store custom graphics. This procedure copies any required graphics to the service file in your NovaTerm folder. Then you can distribute the service file to new users of your service, saving them online time and making initial setup easier (your server's phone number, for example, can already be entered when they receive the file).

Sounds cannot be transmitted on the fly, but should instead be converted to NovaTerm format using the MenuMaker utility (see Chapter 19, "MenuMaker Reference"), placed in the HTML Files folder, and downloaded to the client at sign-on time with a line like the following in the `CheckVersion` template:

```
sound:chirp
```

THE MENU SCRIPT TEMPLATE

In the last chapter, we mentioned that each menu on your server has an attached menu script, written in the NovaScript language, that describes how the menu is to be displayed on the caller's screen.

You don't actually need to know how to use NovaScript to create custom menu scripts. A program included with NovaServer, MenuMaker, can actually write most of the necessary script for you. (You can read about MenuMaker in Chapter 19, "MenuMaker Reference.") Learning a little NovaScript, however, gives you more power and flexibility when it comes to designing your server's look and feel. NovaScript has dozens of commands (you can learn all about them in Chapter 15, "NovaScript Reference"), but here we're concerned with only a handful—just the ones you need to write a menu script template, like the one below.

```
• if client is NovaTerm
  .
  . {commands to display NovaTerm graphic menu}
  .
• exit
• end if
• if client is RIPScrip
  .
  . {commands to display RIP graphic menu}
  .
• exit
• end if
• if client is ANSI
  .
  . {commands to display ANSI menus}
  .
• exit
• end if
• if client is VT100 or client is TTY
  .
  . {commands to display text menus}
  .
• exit
• end if
• begin auto menus
```

For the moment, we've left out the actual commands that define your custom menus—we just want to illustrate the structure you use.

All NovaScript commands, as you may have noticed, start with the bullet character (`*`), which is produced by typing Option-8, and then a space. That's because NovaScript is designed to make it easy to display text information. Any line that does *not* start with the bullet character is assumed to be text that should be printed on the caller's display.

The first line of our script template is an `if` statement that stipulates that the commands that follow should only be executed if the caller is using the NovaTerm client software. If the caller is not using NovaTerm, NovaServer skips ahead to the statement following the next `end if` statement.

Between the `if` and the `end if` statements you can place the NovaScript statements that define your NovaTerm user interface, including `size window`, `draw picture`, `click rect`, and `click oval`. We will cover the function and form of these statements in due time—for now, it's enough to realize that this is where you put such statements.

Just before the `end if` statement for the NovaTerm portion of the script is an `exit` command. This tells NovaServer to stop executing the script at that point. If you did not include an `exit` statement, NovaServer would continue to execute the script—wasting time and perhaps even executing some other statements later in the script that you didn't intend to be used for NovaTerm callers (such as the instructions NovaServer generates for you automatically). Consider the `exit` statement a full stop at the end of this portion of the script.

In our sample template, there are also `if` and `end if` pairs for RIP, ANSI, and TTY/VT100 callers, each of which should include the NovaScript instructions necessary to display a menu for a specific group of callers, followed by the `exit` statement that tells NovaServer that the script has finished its work.

Our template uses the same menu display for TTY and VT100 callers. You don't have to do it the way we've done it here. You can separate the two types of callers using two separate `if` and `end if` pairs, if you prefer. We show them together merely to illustrate the way you might display the same menu for two different types of callers. If you wanted to go further, you could even consolidate ANSI, VT100, and TTY callers all together with a statement like the one below.

- `if client is ANSI or client is VT100 or client is TTY`

The last command in our script template is `begin auto menus`. NovaScript doesn't actually do anything with this statement when it executes the menu script; it's used as a marker by NovaServer's menu editor to figure out which part of the menu script you wrote, and which part of the script NovaServer wrote for you. When you change a menu (by adding or deleting a component, or renaming or changing the key of an existing component), NovaServer generates a standard menu script and places it immediately following the `begin auto menus` statement, replacing whatever script may already be there. If there is no `begin auto menus` statement, the entire script is replaced with the one NovaServer generated. It is important, then, to remember to include this statement—if you don't, you might lose your painstakingly designed menu script when you edit the menu's contents!

If you don't want to write a custom menu script for a particular type of caller—say TTY—and would be satisfied to allow NovaServer to display the default user interface for a specific menu to that particular type of caller, you can just leave out the appropriate block of `if` and `end if` statements. NovaServer uses the automatically-generated script in the absence of a custom script for that type of menu, simply because your script commands come before the automatically-generated commands. The `exit` command in your part of the script keeps the corresponding automatically-generated commands from ever being executed, even though they're still there in the script; with no `exit`, they are still used.

ABOUT AUTOMATIC MENU SCRIPTS

The settings window for each Menu component on your server has a checkbox called Automatic Menu Script. We recommend you leave this checkbox activated. If you deactivate it, you must be sure to include a menu definition for every type of caller you anticipate receiving and not rely on any of the automatically generated scripts. Otherwise, some of your callers might see a blank screen instead of a menu. Deactivating Automatic Menu Script (once you're sure you have written scripts to handle all your callers) can, however, make your Design file somewhat smaller, since it is no longer storing the superfluous scripts.

Deactivating the Automatic Menu Script checkbox clears the existing automatically generated scripts (leaving only script statements that occur before a `begin auto menus` statement). Activating the checkbox adds them again—if there is no `begin auto menus` statement in your custom script, your entire custom script will be erased, so be careful!

MENU SCRIPT FOR NOVATERM CALLERS

Let's take a closer look at the NovaTerm section of our menu script template and see what commands might go inside the structure we've created. Here's a sample script:

- `if client is NovaTerm`
- `size window 400;300`
- `draw picture 0;0;mainmenu;1`
- `click rect ?370;270;395;295`
- `click rect M50;80;350;110`
- `click rect F50;120;350;150`
- `click rect L50;160;350;190`
- `click oval Q5;270;30;295`
- `exit`
- `end if`

The four basic commands used in the NovaTerm section of the script are:

- **size window.** Defines the size of the window in which the image is displayed. The first number is the width; the second is the height. Parameters are separated by semicolons.
- **draw picture.** Displays a graphic in the window. The graphic must be stored in the HTML Files folder (inside the NS Files folder) and can be a JPEG-format or Windows BMP-format graphic. (Both the Macintosh and the Windows NovaTerm client software can display these formats.) We suggest JPEG, since it can take advantage of full-color (24-bit) displays when they are available, yet usually compresses quite well so graphic file sizes are small.

The first two numbers after the `draw picture` command are the X and Y coordinates at which the picture should be drawn in the window. The current version of NovaTerm supports only a single `draw picture` command, and the X and Y coordinates should always be zero. (A future version of NovaTerm may support the ability to build screens from a number of separate graphic elements by overlaying them with multiple `draw picture` commands.) Next is the actual filename of the picture (the filename should not contain any spaces, periods, or semicolons). The final parameter is not used in the current version of NovaTerm, but should always be a 1. All parameters are separated by semicolons.

If the NovaTerm does not already have the necessary graphic, it is transmitted automatically the first time it is needed.

- **click rect.** Defines a rectangular or square button on the graphic. Your graphic should already have pictures of the buttons; this command is used to tell NovaTerm where the buttons are so that when the user clicks one of them, the appropriate action can be taken.

The first character in the parameter string is the key of the menu item that this click region should activate, as assigned in the NovaServer Menu Editor. Immediately following, without a separating semicolon, are the X and Y starting and ending coordinates of the rectangle. For example, the first `click rect` instruction defines a rectangular button whose leftmost X coordinate is 370, whose topmost Y coordinate is 270, whose rightmost X coordinate is 395, and whose bottom-most Y coordinate is 295. This button activates the component assigned to the ? key on this menu.

- **click oval.** Defines an oval or circular button. The parameters of this command are identical to the `click rect` command; the shape of the button is the only difference. The coordinates define the largest oval or circle that fits in the specified rectangle.

NOVATERM AND HTML

NovaTerm supports HTML, the HyperText Mark-Up Language of the World Wide Web. Since all the elements of your server have a URL (Uniform Resource Locator), you can use HTML as an alternate way of creating a user interface for your server. Instead of having a choice on your Main Menu lead to a submenu, you can instead have it open an HTML document using a Display File component. Using standard HTML codes, you can embed graphics and hotlinks to other parts of your server in the document.

You can, in fact, use HTML documents for all of your server's menus, including the Main Menu, bypassing the more traditional NovaTerm methods of creating menus. (We explain how to make the Main Menu an HTML document in the section "Welcoming NovaTerm Callers" in the next chapter.)

You can link to various parts of your server using URLs in the following formats:

<code>http://*/library/libraryname</code>	opens file library
<code>http://*/news/forumname</code>	opens message forum
<code>http://*/mail/*</code>	opens caller's mailbox
<code>http://*/file/filename</code>	opens document inside HTML Files
<code>http://*/external/externalname</code>	runs HTML external
<code>http://*/design/refnumber</code>	opens a design element by reference number
<code>interact://*/external/extname</code>	opens I/O window and runs text external
<code>interact://*/script/scriptname</code>	opens I/O window and runs script

To find out a server component's design reference number, watch the NovaTerm History window as you access the desired element. The full URL, in the `http://*/design/#` format, is displayed and may be copied to the clipboard. The Main Menu's reference number is always 17; other elements' reference numbers are assigned at random as you build your server's menu structure.

- *If you have licensed the Web Out option, you may also use any World Wide Web URL which begins with `http`.*

MENU SCRIPT FOR RIP CALLERS

RIP (Remote Imaging Protocol), originally developed by TeleGrafix for MS-DOS computers, allows graphics to be transmitted from information servers (like NovaServer) to RIP-compatible client software. The original RIPTerm ran only under MS-DOS, but today there are many RIP-compatible terminal programs for MS-DOS, Windows, and even the Macintosh. RIP 1.5x graphics must use the standard PC EGA color palette and be no larger than 640 pixels by 480 pixels. RIP 2.0x graphics can use up to 256 colors and are VGA-compatible. RIP graphics files are automatically transmitted to callers when needed and stored on the caller's hard drive for future use.

The basic format of a RIP menu script is something like this:

- `if client is RIPScrip`
- `setup rip menu`
- `draw rip icon 0;0;mainmenu;1`
- `rip click ?370;270;395;295`
- `rip click M50;80;350;110`
- `rip click F50;120;350;150`
- `rip click L50;160;350;190`
- `rip click Q5;270;30;295`
- `exit`
- `end if`

Comparing this RIP sample script with the sample script listed above for NovaTerm callers may be instructive. It looks almost identical—the commands are only slightly different.

- **setup rip menu.** Clears the RIP graphics screen and prepares it for menu display.
- **draw rip icon.** Draws a RIP picture (an icon) on the RIP graphics screen. Takes the place of the `draw picture` statement used for NovaTerm clients. While RIP graphics files are *called* icons, this doesn't mean they have to be tiny. In fact, they can cover the whole screen. RIP icons can be a maximum of 640 pixels wide by 480 pixels tall and must be saved in the special RIP graphics format.

The first two numbers after the command are the X and Y coordinates at which the picture should be drawn in the window. Next is the actual filename of the picture (the filename should adhere to MS-DOS naming conventions and end with the *.icn* extension, although the extension is not specified in the command). The final parameter is not used, but should always be a 1. All parameters are separated by semicolons. You may use multiple `draw rip icon` statements to build a screen out of smaller components—pictures drawn later in the script can be drawn over pictures drawn earlier in the script.

The MenuMaker program included with NovaServer can be used to convert graphics to RIP format. Paste the graphic to be converted into MenuMaker, then choose Convert PICT To RIP Icon from the File menu. (See Chapter 19, "MenuMaker Reference," for more details.)

- **rip click.** Defines a rectangular or square button on the graphic. Your graphic should already have pictures of the buttons; this command is used to tell the RIP client where the buttons are so that when the user clicks one of them, the appropriate action can be taken.

The first character in the parameter string is the key of the menu item that this click region should activate, as assigned in the NovaServer Menu Editor. Immediately following, without a separating semicolon, are the X and Y starting and ending coordinates of the rectangle. For example, the first `rip click` instruction defines a rectangular button whose leftmost X coordinate is 370, whose topmost Y coordinate is 270, whose rightmost X coordinate is 395, and whose bottom-most Y coordinate is 295. This button activates the component assigned to the ? key on this menu.

Unlike NovaTerm, RIP does not support oval click regions.

If you have purchased RIPaint™ software from TeleGrafix, you may also save complete RIP graphics sequences (including multiple icons and even animation) as single files. These files can then be displayed for the caller with a single script statement. Simply store your RIP files in the appropriate RIP Files folder inside the NS Files folder, then write your script as follows:

- `if client is RIPScrip`
- `print RIP "MainMenu.RIP"`
- `exit`
- `end if`

MENU SCRIPT FOR TTY CALLERS

Scripts for TTY and VT100 callers are usually simple text menus. For TTY callers, your script might look like this:

```
• if client is TTY
• clear screen
My Server's Main Menu
```

```
M -- Mail Room
F -- Message Forums
L -- Software Libraries

Q -- Quit and Log Off
```

continued on next page

- display "Enter choice: "
- exit
- end if

This particular menu is a little plain, but it illustrates the concept clearly enough. Remember that lines that do not start with a bullet (•) are simply displayed on the caller's screen; most of this script consists of this sort of text. Only two new commands are used.

- **clear screen.** Clears the screen on some terminals. This command isn't accepted by all plain-text terminals, but on those where it is, it helps keep the screen from becoming too cluttered if used judiciously.
- **display.** Displays messages and variables to the caller. The display command can be used with a number of different variables, including handle to show a caller's name from within a menu script, but in this case, we're simply using it to display a prompt. The display command does not output a carriage return after the message, so it's perfect for this use, since we want the cursor to appear immediately following the prompt. (If we simply included the text in the menu script, the cursor would appear on the line following the prompt, instead of on the same line.)

MENU SCRIPT FOR VT100 CALLERS

VT100 callers have a few additional terminal capabilities—on VT100 terminals, you can move the cursor around using any of the following cursor command formats:

- cursor up 2
- cursor right 48
- cursor left 5
- cursor down 9

Some VT100 emulations also support color text. Commands such as the following can take advantage of this feature. (VT100 emulators that do not support color simply ignore these commands, and they have no effect on TTY callers.)

- red forecolor
- black backcolor

The `forecolor` and `backcolor` commands affect only text that is printed after the command is executed, making it possible to draw simple boxes and other graphics on the screen. To fill the entire screen with a color, use the `clear screen` command after changing the background color. Available colors include black, white, red, green, blue, magenta, cyan, and yellow.

Here is a simple VT100 menu that displays the name of the server as white text inside a blue box, with the name of the menu in red text and the rest of the menu in white text, both on a black background.

```
• if client is VT100
• black backcolor
• clear screen
• blue backcolor
• white forecolor
• display "                "

• display "  My Server  "

• display "                "
• cursor up 1
• cursor right 15
• black backcolor
• red forecolor
Main Menu
• cursor down 2
• white forecolor
M -- Mail Room

F -- Message Forums
L -- Software Libraries

Q -- Quit and Log Off

-----

• display "Enter choice: "
• exit
• end if
```

MENU SCRIPT FOR ANSI CALLERS

Scripts for ANSI callers can use all the same scripting commands that are available to scripts for VT100 callers (see section above). All ANSI terminals support color and cursor movement. In fact, one could look at ANSI as just another text terminal, and lump it in with TTY and VT100.

However, ANSI also features character graphics: ASCII codes greater than 127 are assigned to small, icon-like characters that can be used to construct boxes and other shapes. Combined with ANSI's color capability, it is possible to make some quite striking ANSI graphics menus. In fact, programs exist with no other purpose than to allow system operators to paint menus with ANSI graphics. Check NovaCentral, the ResNova support server, for such programs. (One such program for the Macintosh is called AnsiMouse.)

While it is beyond the scope of this manual to instruct you in how to design ANSI graphics, we can show you how to include even the most complex ANSI graphics menus in your server. Simply save them as text files, store them in a folder called ANSI Menus in your NS Files folder, and call them from within your menu scripts like this:

- `if client is ANSI`
- `printANSI "NS Files:ANSI Menus:MainMenu"`
- `exit`
- `end if`

This same technique can also be used with VT100, and, for that matter, TTY, but it is used primarily with ANSI because of the emulation's support for graphics characters.

CUSTOMIZING MENUS BY ACCESS LEVEL OR ACCESS GROUP

We have already seen how NovaScript's `if` statement allows us to write our scripts so that some parts apply to callers who are using NovaTerm, some parts apply to callers who are using RIP, and some parts apply to callers who are using VT100, ANSI, or TTY emulation. But the `if` statement's power doesn't end there. You can customize your menus based on a number of other criteria, as well. One common customization is to hide or show certain menu items based on whether the user has a certain access level, or is a member of a particular group.

The form of the `if` statement used to do this takes one of the following two forms. The template below allows you to display different menu items depending on whether the user account's access level fields are all greater than 500:

- `if access ≥ {500,500,500,500}`
 - `.`
 - `{statements to execute if condition is met}`
 - `.`
- `else`
 - `.`
 - `{statements to execute if condition is not met}`
 - `.`
- `end if`

The greater-than-or-equal-to symbol (\geq) is generated by holding the Option key while pressing the period (.) key. You may also use £ (Option-comma), <, >, =, and π (Option-equals)—with each operator, the entire comparison is true if and only if each and every one of the account's four access levels passes the comparison with the corresponding number in the `if` statement.

Below is the corresponding structure for displaying menu items dependent on whether the user is a member of the group Moderators.

- `if memberOf "Moderators"`
 - `.`
 - `{statements to execute if condition is met}`
 - `.`
- `else`
 - `.`
 - `{statements to execute if condition is not met}`
 - `.`
- `end if`

In both structures you may optionally omit the `else` statement if you merely want to omit menu items when the condition is not met. You may use such structures inside any section of any menu script—as many as you need.

Let's assume that there's a Super Secret Area on our server's main menu that is to be accessible only to trusted individuals. We place these trusted individuals into a group called SecretAgents. Let's add the Super Secret Area to our Main Menu and to the custom menu script we've developed in this chapter. Below is the section of the script for NovaTerm callers (the script commands that we've added are shown in boldface).

- if client is NovaTerm
- size window 400;300
- **if memberOf SecretAgents**
- **draw picture 0;0;mainmenu2;1**
- **click rect S150;270;250;295**
- **else**
- draw picture 0;0;mainmenu;1
- **end if**
- click rect ?370;270;395;295
- click rect M50;80;350;110
- click rect F50;120;350;150
- click rect L50;160;350;190
- click oval Q5;270;30;295
- exit
- end if

Since NovaTerm supports only one picture in each menu, we must create a separate image of the original main menu if we want to add a button. We have saved this graphic, with the additional button, as mainmenu2.jpg, and if the user is a member of the SecretAgents group, we display that graphic (and set the click region for the new button) instead of the original one. If the user is not in the SecretAgents group, the else branch is taken and the normal main menu graphic is displayed. The two forks of possible execution meet up at the end if; statements that follow are executed regardless of whether the user is in the SecretAgents group.

Here's how we might rewrite the section of the script for RIP callers. Again, the new lines are in boldface.

- if client is RIPScrip
- setup rip menu
- draw rip icon 0;0;mainmenu;1
- **if memberOf SecretAgents**
- **draw rip icon 150;270;secret;1**
- **rip click S150;270;250;295**
- **end if**
- rip click ?370;270;395;295

Continued on next page

- rip click M50;80;350;110
- rip click F50;120;350;150
- rip click L50;160;350;190
- rip click Q5;270;30;295
- exit
- end if

With RIP clients, we can draw icons on top of other icons, so we simply created a new graphic for just the Super Secret Area button and saved it as `secret.icn`. Then, in our script, we draw this button (and define its click region) only if the user is a member of the `SecretAgents` group. There is no `else` statement, since there is no need to draw a different picture if the member is not in the group.

Here's the TTY portion.

- if client is TTY
 - clear screen
- My Server's Main Menu

M -- Mail Room

F -- Message Forums

L -- Software Libraries

- **if memberOf SecretAgents**

- **S -- Super Secret Area**

- **end if**

Q -- Quit and Log Off

- display "Enter choice: "
- exit
- end if

This should be looking familiar by now! We'll skip the VT100 version, because the changes would be virtually identical. Similarly for the ANSI section—it would either resemble the VT100 section, or it would resemble the NovaTerm section, with one of two custom ANSI screens being displayed by `printANSI` depending on whether the user was a member of the `SecretAgents` group.

A complete listing of the conditions you can test using the `if` statement can be found in Chapter 15, "NovaScript Reference."

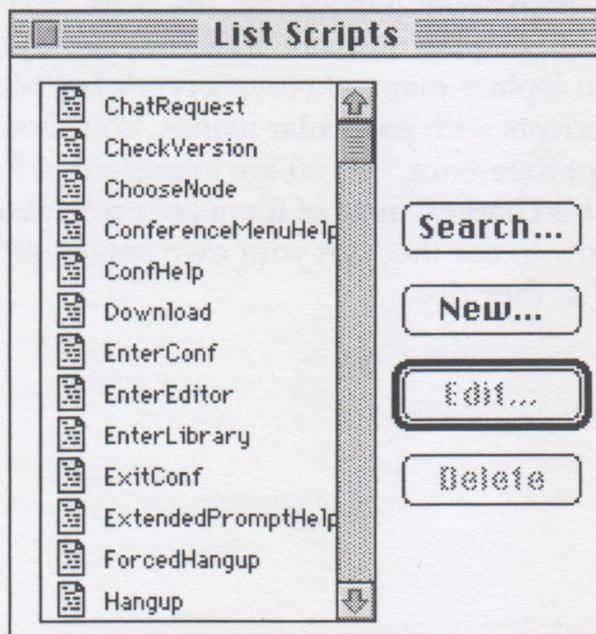
ENHANCING YOUR SERVER WITH NOVASCRIPT

- In this chapter, you'll learn how to use NovaScript to customize your server's prompts and Welcome behavior.

ADDING AND EDITING OTHER SCRIPTS

In addition to the NovaScript scripts attached to each of your server's menus, NovaServer also uses a number of other scripts to generate the user interface a caller sees. Some of these deal with the log on process; some are prompts and help screens for text-mode users. None of these scripts are attached to a particular menu; instead, they're stored in the *script vault*. The vault also stores the scripts you run with a Run Script component, or that you call with a hotlink in an HTML document.

To view the list of scripts, choose Scripts from the Setup menu. The List Scripts window, below, appears.



When the List Scripts window is frontmost, you can perform the following actions:

- **Open an existing script** to view or edit it by clicking the script name, then clicking Edit. (You may also double-click the script name.)
- **Delete an existing script** by clicking the script name, then clicking Delete. You should not delete scripts that are required by the server; if you do, callers see a message indicating that the script does not exist whenever they use a part of the server that requires the script.
- **Create a new script** by clicking New, then entering the name to be given to the new script. An empty editing window appears.
- **Find a particular script** by clicking Search and entering part or all of the desired script's name in the dialog that appears, then pressing Return. The first script whose name contains the text you entered is highlighted. You may bring the Search Window back to the front and click Find Next to find the next occurrence, if any, of the partial name you entered.

You should examine the scripts shipped with NovaServer to customize them for your needs, or to translate them to another language. The built-in scripts generate many of the prompts and help screens displayed by the server to text-mode users. It is possible to display different prompts and help screens to ANSI, VT100, and TTY users by including appropriate `if client is` statements for each type of terminal, and ending each set of instructions with `exit` and `end if` instructions. These scripts are not used by NovaTerm callers, because NovaTerm uses its own window-based user interface for the various server elements.

The more you learn about NovaScript, the more flexibility you have in creating scripts to display one-time bulletins, surveys, and more. It is also possible to replace many of NovaServer's built-in prompts by creating new scripts with particular names. You should study Chapter 15, "NovaScript Reference," if you are interested in fully understanding the scripts in this chapter; most of them are presented as recipes, with an emphasis of how to use them on your own server, rather than how they actually do what they do.

WELCOMING NOVATERM CALLERS

The Welcome process is another easily-customizable part of your server's user interface. If the caller is using NovaTerm, the Welcome.html file (in the HTML Files folder, inside the NS Files folder) is displayed in the Welcome window immediately after the user's account ID and password have been accepted.

The Welcome.html file is an HTML document. Chapter 16, "HTML Reference," contains more information about creating HTML documents. For now, however, you can get by by simply replacing the Put Your Information Here line in the sample HTML document below with the text you wish to display. Use <P> to separate paragraphs.

```
<html>
<head><template name="WelcomeWindow"></head>
<body>
<part name="body">
Put Your Information Here in HTML Format
</part>
</body>
</html>
```

You can use the Welcome.html file to display important information—credits, announcements, and so forth. Since it's an HTML document, you can include graphics and hotlinks to other resources on your server. Clicking Continue in the Welcome window displays the server's Main Menu. (The Welcome.html file is optional; if it's not found, the user is sent directly to the Main Menu.)

However, since it's not a NovaScript script, the Welcome.html file cannot display different types of information depending on the caller's access level or other factors. For this reason, an optional script called NovaTermLogon is executed before Welcome.html is displayed. The NovaTermLogon script can be used to display different HTML files or execute scripts (using the requestURL command) depending on the user's access level, the number of calls they have made, and other factors.

The NovaTermLogon script is an *invisible script*. The script does not open a window, and therefore cannot output text or request information from the user. If you wish to display text or accept keyboard input, create a separate script—name it anything—and use a `requestURL` statement of the format `requestURL "interact://*/script/scriptname"` to execute it. The `interact` URL opens a VT100 terminal emulation window and allow the specified script to use it for input and output. (The NovaScript `run script` command does not open a terminal window and therefore should not be used in the NovaTermLogon script. It can, however, be used in scripts called from NovaTermLogon, since at that point, a terminal window is already open.)

Below is a sample NovaTermLogon script that displays one HTML document for Sysops, a different one for new users, and the standard Welcome.HTML document for everyone else.

- `if sysop or memberOf "Moderators"`
- `requestURL "http://*/file/SysopWelcome.html"`
- `exit`
- `end if`
- `if calls = 1`
- `requestURL "http://*/file/NewUserWelcome.html"`
- `exit`
- `end if`
- `requestURL "http://*/file/Welcome.html"`

In the script above, the SysopWelcome.html document is displayed if the user has system operator access or is a moderator. The NewUserWelcome.html document would be displayed if the user is a new user (that is, this is the user's first call). If neither is true, the Welcome.html file is displayed. If you use the Welcome.html template given above to construct the SysopInfo.html and NewUserInfo.html files, they appear in the Welcome window in place of the Welcome.html file.

You can end a script with `requestURL "http://*/design/17"` to display the Main Menu, bypassing the Welcome.html file entirely. (If you have elected to design your NovaTerm custom user interface, including the Main Menu, entirely in HTML, you can also use `requestURL` to open a document such as MainMenu.html, which you would create yourself to contain an HTML version of the server's main menu, at the end of the script.)

WELCOMING TEXT-MODE AND RIP CALLERS

A script named Logon is executed after a text-based (or RIP) user's account ID and password have been accepted. You can use this script to display the same kind of information displayed to NovaTerm callers by the NovaTermLogon script and the Welcome.html file. (Since text and RIP callers can't view HTML documents, you should include all the text from both NovaTermLogon and Welcome.html in the Logon script.)

Here is a sample Logon script, very similar in concept to the one we presented earlier for NovaTerm users:

- `if sysop or memberOf "Moderators"`
- `printPagedText "Sysop Text"`
- `display "End of file. Press Return. "`
- `request return`
- `exit`
- `end if`
- `if calls = 1`
- `printPagedText "New User Text"`
- `display "End of file. Press Return. "`
- `request return`
- `exit`
- `end if`

Welcome to our server!

- `print file "Banner Text"`
- `display "Press Return for the Main Menu. "`
- `request Return`

The Sysop Text file is displayed if the user has system operator access or is a moderator. (The `printPagedText` command is used to display the file to the caller in manageable screen-sized chunks.) The New User Text file is similarly displayed if the user is a new user (that is, this is their first call). If neither of these conditions is true, a simple greeting is displayed, along with the contents of a text file called Banner Text. This is where you include ASCII or ANSI art for your server's splash screen. (You can use commands like `if client is ANSI` here to write NovaScript code that applies only to ANSI callers.) The `request return` command is used liberally to ensure that text remains on the screen until the user has had a chance to read it.

ONE LOGON SCRIPT FOR ALL CALLERS

Some system operators prefer to maintain just one Logon script for both NovaTerm and text-mode callers. You can do this by simply making your NovaTermLogon script call the Logon script. Within your Logon script you can then use the `if client is NovaTerm` statement to differentiate between types of callers, just as you would in a menu script. You should not use the `requestURL` command for non-NovaTerm callers.

The disadvantage of this technique is that NovaTerm users always see the VT100 terminal emulation window, even if nothing is printed in it. Still, if you plan to print something in this window at every logon anyway, you may find maintaining a single Logon script more convenient.

To use the Logon script for both NovaTerm and text-mode callers, the following command should be the only line in your NovaTermLogon script:

- `requestURL "interact://*/script/Logon"`

The Logon script should eventually exit through the following lines:

- `if client is NovaTerm`
- `requestURL "http://*/file/Welcome.html"`
- `exit`
- `end if`

As discussed above in "Welcoming NovaTerm Callers," you may also display the Main Menu or an alternate HTML document in place of the Welcome.html document.

CONFIRMING NEW ACCOUNTS

Since the entire Logon and Welcome process is controlled by NovaScript commands, it is almost infinitely flexible and customizable. One thing you might do is show new callers the rules of using your server (often called a User Agreement or Acceptable Use Policy) and give callers a chance to cancel their accounts if they don't want to accept your rules. Here's such a script, which you can save as ConfirmAccount.

- clear screen
- printPagedText "User Agreement"
- display "End of file. Press Return. "
- request return
- clear screen

You have now read our User Agreement. Continued use of this server requires you to abide by the rules we have established, at the risk of termination of your account. If you do not agree to follow our rules, you may not access our server.

Do you agree to play by our rules? Remember, answering NO cancels your account.

- if ask "Please enter Y or N: "
- clear screen

Thank you! We hope you enjoy using our server. Please don't hesitate to send Feedback from the Main Menu if you have questions or comments about our services.

- display "Press return. "
- request return
- else
- clear screen

Thank you for your honesty! Please feel free to call again if you reconsider.

- display "Press Return to delete your account."
- request return
- deleteAccount
- disconnect
- exit
- end if
- if client is NovaTerm
- requestURL "http://*/Welcome.html"
- end if

To call the ConfirmAccount script during the new caller sign-up process, put the following lines in your Logon and NovaTermLogon scripts. (If your Logon and NovaTermLogon scripts already have a section to deal with new users, add the run script or requestURL command there.)

Add to Logon

- run script ConfirmAccount

Add to NovaTermLogon

- requestURL "interact://*/script/ConfirmAccount"

By the way, if you change your User Agreement, you might add a Run Script component to your server's main menu to allow users to accept the new terms—or create a one-time bulletin as discussed later in this chapter to alert users to the new terms.

NEW USER SURVEY

Another frequently useful feature is a New User Survey script to request additional information from your users—information above and beyond what NovaServer requests during the account creation process. Here is such a script. Your users' answers to your questions are stored in the file `New User Text`. Each user's answers will appear separated by a line of dashes. You should find it easy to change the questions, or add new ones, using this template.

- Clear Screen

New User Survey

- if ask "Do you want to take a New User Survey? "
- `OpenTextFile "New User Text"`
- `Write String "-----"`
- `Write Now -- current date and time`
- `Write AccInfo -- account information`

Where did you hear about our Information Server?

- `Display "Enter: "`
- `Write String "Where: "`
- `input string`

What type of information are you looking for?

- `Display "Enter: "`
- `Write String "Information:"`
- `input string`

What other online services do you use?

- `Display "Enter: "`
- `Write String "Services:"`
- `input string`

What is your profession?

- `Display "Enter: "`
- `Write String "Profession:"`

Continued on next page

- input string

Thank you for taking the time to complete our survey!

- display "Press Return. "
- request Return
- if term is NovaTerm
- write String "Connected using NovaTerm."
- end if
- if term is RIPscrip
- write String "Connected using RipTerm."
- end if
- if term is VT100 or term is TTY or term is ANSI
- write String "Connected in text mode."
- end if
- exit
- else

That's OK. If you later decide you would like to take our survey, please choose User Survey on our Main Menu.

- display "Press Return. "
- request Return
- end if

As with the ConfirmAccount script, you need to add a run script command to your Logon script, and a requestURL command to your NovaTermLogon script, to execute the NewUserSurvey script at logon. If you are already using the ConfirmAccount script, you can simply add the following line at the end of it to call the NewUserSurvey after the user agrees to your usage policy:

- run script "NewUserSurvey"

Otherwise, add the lines below to the sections of your Logon and NovaTermLogon script that begin with if calls = 1.

Add to Logon

- run script NewUserSurvey

Add to NovaTermLogon

- requestURL "interact://*/script/NewUserSurvey"

ONE-TIME BULLETINS

Occasionally you need to give all your users a brief message—such as “The server will be down for a hardware upgrade from 1 PM to 2 PM Monday.” You could send them all an electronic mail message, but that’s inconvenient, and it might take up a lot of room on your server to store dozens or hundreds of copies of the same message. You could put the message in your Login script or your Welcome.html file, but then users see it every time they log on. Your important message might well get lost in all the other things that are in your Welcome file.

A better way is to use a one-time bulletin, displayed at logon. As the name implies, a one-time bulletin is displayed only once for each caller. NovaScript has features that make this a fairly simple task.

Add the following script, CheckBulletins, to your server. Leave out the `run script` commands for now (since you don’t actually have any bulletin scripts created yet).

CheckBulletins

Checking for bulletins...

- `pause for 120`
- `run script Bulletin1`
- `run script Bulletin2`
- `run script Bulletin3`
- `run script Bulletin4`
- `run script Bulletin5`
- `exit`

Each time you need to leave your users a one-time bulletin, create a new script called BulletinX, where X is a number, using the template below. (You can use the Copy and Paste functions on the Edit menu to copy an existing bulletin script to a new script.) Then add an appropriate `run script` command to the CheckBulletins script for the new bulletin script you just added. All users see the new bulletin the next time they log on. (New users see all bulletins.)

BulletinX

- `if lastcall < lastsave`
- `clear screen`
- `display "BULLETIN -- LAST UPDATED " lastsave`

Continued on next page

Your message goes here. There should be two blank lines above this line, and one after it. Keep your message under 20 lines long (or include a Request Return command after the first 20 lines to allow the user to read one screen before being presented with the next).

- display "Press Return: "
- request return
- end if

To activate the CheckBulletins script every time a user logs on, add the following line to your Logon and NovaTermLogon scripts:

Add to Logon

- run script CheckBulletins

Add to NovaTermLogon

- requestURL "interact://*/script/CheckBulletins"

Freshening bulletins. Sometimes, if a bulletin is particularly important, you may want users to see it more than once. For example, if you are taking the server down Friday for a hardware upgrade, you might want the users to see the bulletin starting on Monday—and then again on Thursday, even if they already saw it on Monday, Tuesday, or Wednesday. You can do this by freshening the bulletin. Simply open the Bulletin script, make any change that doesn't have any real effect (for example, add a blank line by pressing Return, then press Delete to erase it), and close it again, saving the script in the process. The script's modification date is updated so it is new again to all callers.

Expiring bulletins. When the information in a bulletin is no longer useful, you should remove the script and delete the applicable `run script` command from CheckBulletins. Nothing is more embarrassing than watching a user log on and get two-month-old "news!"

More powerful welcome scripts. The bulletin concept, and the form of the `if` statement that allows scripts to be executed only once every time you change them, can be extended to work with other sorts of scripts, such as the ConfirmAccount and NewUserSurvey scripts. Instead of using `if calls = 1`, you can write `if lastcall < lastsave`. Since `lastcall` is always zero for new users, a one-time script of any sort is always executed on the user's first call—and *also* on any subsequent call after you change the script.

R U N N I N G
Y O U R S E R V E R

.....



This section includes chapters designed to help you handle the day-to-day operation of NovaServer. These chapters include:

Chapter 7	Managing Your Accounts	115
Chapter 8	Maintaining and Managing Your Server	135
Chapter 9	Remote Maintenance	155
Chapter 10	Running a Virtual Server	173

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MANAGING YOUR ACCOUNTS

- *In this chapter, you'll learn how to manage your user accounts using NovaServer's account database.*

ACCOUNT MANAGEMENT BASICS

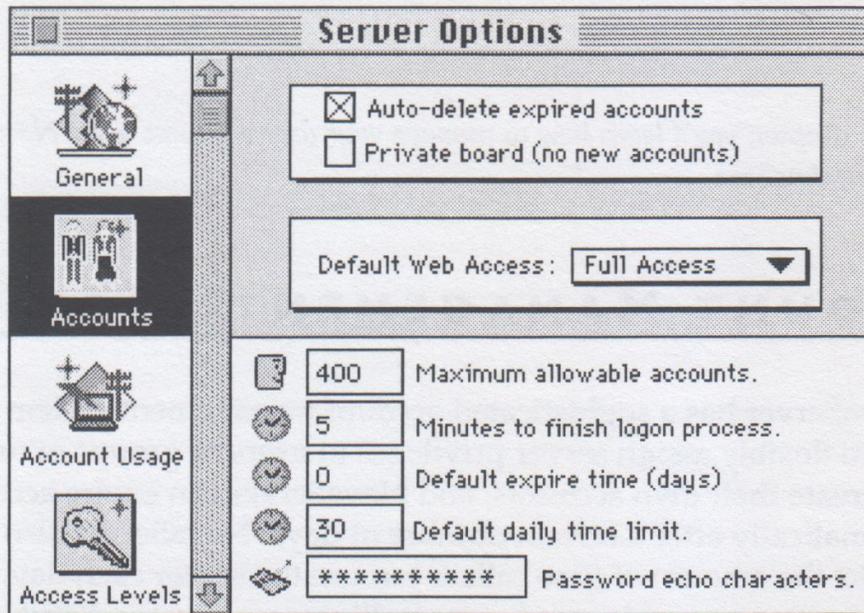
NovaServer has a sophisticated account management system that allows you to flexibly assign server privileges to users or groups of users. Users can create their own accounts, and NovaServer can expire accounts automatically after a certain number of days. NovaServer also lets you to restrict the amount of time callers can use the server each day. You can also create groups of users for controlling access or for distributing electronic mail.

NovaServer is unique among desktop information servers in its support for an external account database. Such a database allows multiple machines running NovaServer to share accounts and to act as a single *virtual server*. The account server can be any relational database server that adheres to Microsoft's ODBC (Open Data Base Connectivity) standard. You can read more about this capability in Chapter 10, "Running a Virtual Server." Using an external account server, however, does not affect the way you manage accounts in NovaServer. The software acts the same whether you are using NovaServer's built-in account database or an external account database.

NovaServer does not have a built-in billing system. It does, however, have the capability to track every user action through its logging features. A stand-alone program can later analyze server logs to support any desired billing methodology. One such program is BBS Biller,TM published by Matterform Media. With NovaServer's powerful new external account database options, we expect to see third-party billing packages that work with Butler and other ODBC databases soon, as well.

ACCOUNT OPTIONS

NovaServer's Server Options window (accessible by choosing Options from the Setup menu) includes several settings, in the Account panel, that affect how your server deals with accounts. Review them now to ensure they're set up the way you want them.



Auto-delete expired accounts. Automatically deletes accounts when they have expired. If this checkbox is deactivated, accounts are only marked as unverified, rather than deleted, when the account's expiration date has been reached. You set an account's default lifespan in the Default Expire Time (Days) field, discussed below.

Private board (no new accounts). If this checkbox is activated, users may not create their own accounts—only the system operator can create them. If it is not activated, users can create their own accounts by typing New at the Account ID prompt and answering a few questions.

Default Web Access. Selects the initial Web access callers have when their account is first created, if you have licensed the Web Out option for your NovaServer. (You can later change this setting on an account-by-account basis.) You may allow users to visit any site (Full Access), no sites (None), all but the sites you have specifically blocked access to (Default Allow), or no sites but the ones you have specifically permitted access to (Default Deny). See Chapter 12, "Networking With The Internet," for more details on creating a database of allowed or blocked Web sites.

Maximum allowable accounts. This number does not reflect the number of account licenses you have bought for NovaTerm callers; rather, it indicates the number of accounts NovaServer's account database is currently configured to hold. You should keep this number as small as possible—small databases are more efficient than large ones—and increase it only when necessary to support more new users.

Default expire time (days). Determines how long newly created accounts last. (If this field is zero, new accounts will never expire.) You can later change the expiration dates of individual accounts as necessary. If the Auto-delete Expired Accounts checkbox in the Accounts panel is activated, accounts are automatically deleted when they expire; otherwise, they merely cannot log on until their account is re-activated by the system operator.

Default daily time limit. Determines how many minutes per day a new user is permitted. You can later change this value on an account-by-account basis.

ACCESS LEVELS

NovaServer has a very flexible access level system. Instead of having a single access level, NovaServer has four independent access levels per user—each with an allowable value of 0 to 1000. When NovaServer compares a user's access level to the access level required for a particular component or function, each of the four separate fields in the user's access level must be greater than or equal to the corresponding field of the required access level.

So, for example, if the required access level for a particular server component was 500, 500, 500, 500, and the user's access level was 600, 400, 400, 400, the user would *not* be allowed to use that component, since only *one* of his four user access level fields is greater than or equal to the corresponding required access level field.

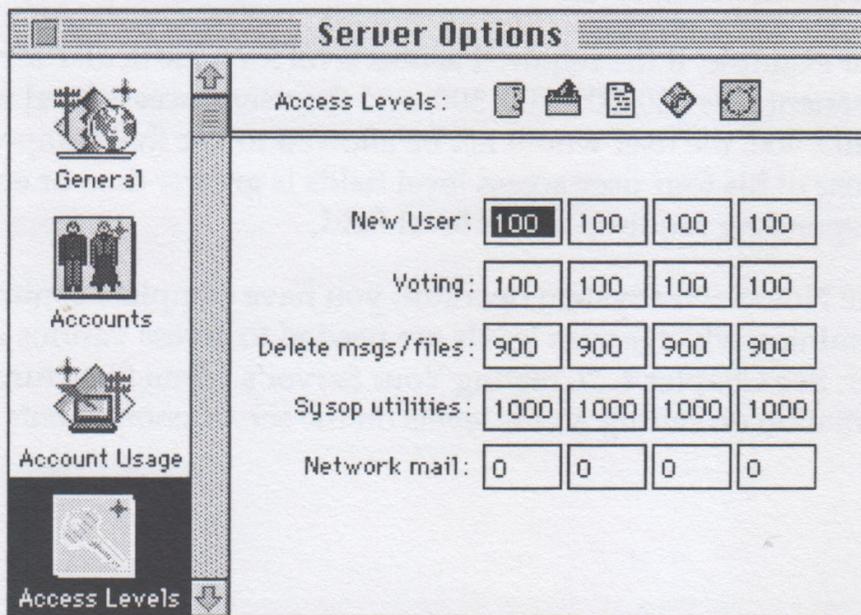
As the NovaServer system operator, you have complete control in determining which access levels are needed to access various areas of the server. See Chapter 4, "Creating Your Server's Menu Structure," for more information on setting access levels on the server components you add.

Why four separate access levels? Suppose you want to allow some users to have access to certain parts of your server independent of their main access level. For example, you might offer access to three different unique information services for a flat monthly fee. Users can buy these services one at a time, so you need to have some way of blocking users' access to the services they haven't paid for while allowing them to access the ones they have.

The second through fourth access level settings allow just this kind of flexibility. If you wanted to allow access to a certain area of your server only to users who have a third access level of 800, you might set that area's requirement to 0, 0, 800, 0. This effectively lets users into that area as long as their third access level field is at least 800—regardless of what their other access level fields contain.

Groups are another way of setting up this kind of access. You can create a group for each special service you wish to sell access to—any number of them. For this reason, most system operators no longer use the four separate access levels provided by NovaServer. In this case, you can choose to use only the first access level field, setting all the others to zero throughout the server, or you can simply set all the access level fields to the same value, which is what we've done in the default NovaServer configuration. However, if you want to use the four access levels independently, they're available for you to do so.

The Access Levels panel of the Server Options window (choose Options from the Setup menu) allows you to define the default access level for a new account, as well as certain broad privileges associated with certain access levels. The panel, shown below, has the following settings:



New User. The access level given to a new user at account creation. This access level can later be changed on an account-by-account basis. Some system operators prefer to set up their server so that new users can read, but not post, to message forums, and can browse, but not download from or upload to, file libraries, until the account has been validated. At that point the system operator increases the user's access level. In this case, you might require an access level of 200, 200, 200, 200 to do anything but look at your server, and give new users an access level of 100, 100, 100, 100 until they are verified.

Voting. Sets the access level required to allow users to use Vote components. You can also set the access level for Vote components individually (see Chapter 4, "Creating Your Server's Menu Structure"). Users must meet both the Vote access level set here, and the access level on the individual Vote component, to participate in voting.

Delete Msgs/Files. Sets the access level required to allow users to delete any message or file from any message forum or file library. (Users can delete their own messages and files as long as they have posting privileges to the forum or library.) If you want to give a few users this power across your entire server, make sure they have at least this much access. To give users this power in only a few forums or libraries, use the Moderator Group field of the forum or library component instead.

Sysop Utilities. Sets the access level required to perform highly privileged actions, such as editing the server remotely, releasing files, editing accounts, and so on. Make sure that only trusted users have this access level.

NovaTerm Client. Sets the access level required to use NovaTerm, the graphical user interface software for Macintosh and Windows, on this server. Note that the default configuration allows new users to use NovaTerm.

Network Mail. Sets the access level required to receive and send electronic mail to other servers and to Internet destinations, if your server is networked. The default configuration allows all users to use network mail; as with NovaTerm access, you may wish to increase the access level to allow only users who have made a donation to your server network mail access.

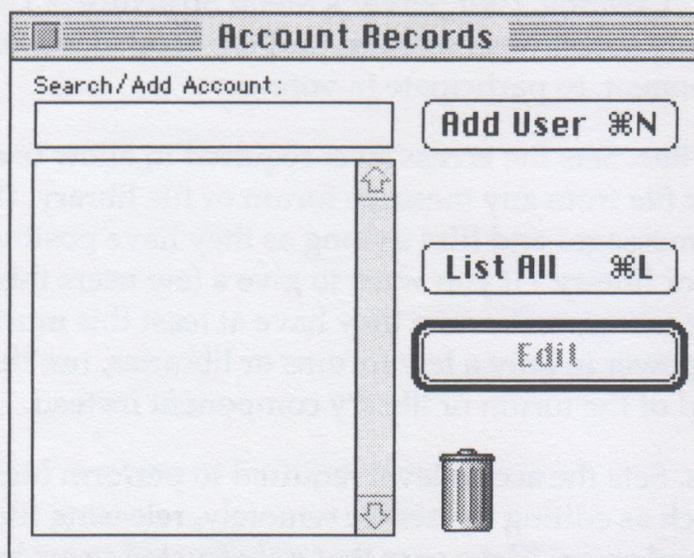
CREATING USER ACCOUNTS

You may create new user accounts one at a time. Usually, you do this for people who you know (such as your moderators), or, if you run a for-pay information server, for people who send in payments or credit card numbers and request an account.

To create new accounts:

1 Choose Accounts from the Setup menu.

The Account Records window (below) appears.



2 Type the handle of the new account into the Search/Add Account field and wait a few seconds.

NovaServer searches the account database for the handle you entered. If a user with the chosen handle already exists, it appears in the account list, in which case you should select a different handle for the new account and enter it instead, then let NovaServer check to see if it exists.

3 Click Add User or press %N to add the account.

An account record window for the new account appears.

4 Fill in the fields in the account record with the pertinent information.

Be sure to set a password for the new user; he or she won't be able to log on without one. See the section "The Account Record Window," later in this chapter, for more information on what each field should contain. Finally, make sure that the account has been marked Verified. A sample account record is shown below.

First: Robert	Last: Mason	Text Emulation: VT100
Handle: Robert Mason		Web Access: Default Allow
Company: Central High School		Account License: Universal
Address: 1200 Woodward Ave.		
City: Detroit	State: MI	
Zip: 48230	Phone: 313/555-1414	
Password: ●●●●●●	Level: 100 100 100 100	<input checked="" type="checkbox"/> Account Expires:
Uploads: 0	Calls: 0	Time/day: 60
Downloads: 0	Posts: 0	K DId: 0
		Mth. Day Year 1 / 1 / 99
		<input type="checkbox"/> Expiration Active
<input checked="" type="checkbox"/> Verified	<input type="checkbox"/> Use NS Notifier	First Call: 8/28/95
		Account ID: 4

5 Close the account record window by clicking its close box or by pressing ⌘W.

An alert asks if you want to save the changes you made to the account.

6 Click Yes or press Return to save the changes.

NovaServer creates the new account.

7 To add additional accounts, repeat steps 2-6.

CREATING A GUEST ACCOUNT

If your server is a for-profit enterprise—or even if it's not—you probably should create a guest account. Guest accounts allow users a limited time to log on and check out the system at no charge—before they decide to sign up for an account. If you do not offer a guest account, users may pass your server by when they find out you expect them to pay for access without even letting them sample your wares first. Think of a guest account as advertising overhead.

Guest accounts are created like any other account (see "Creating User Accounts," above). You should use the handle Guest and no password, and set the account's time limits so that it has an unlimited (zero) number of minutes per day. You should also set this account's access level so that users can read message forums, but not post, and so that they can browse file libraries, but not upload or download files. If there are any unusual features your server offers, you might want to let guests read about them, but not actually use them, until they pay. (You might have already constructed your server's menu structure with exactly this sort of thing in mind.) Finally, make sure the Account License is set to Guest Account.

The main operational differences between a guest account and a regular account are twofold. First, any number of users can simultaneously use your guest account, whereas NovaServer rejects any attempt by a regular account to log on more than once simultaneously. Second, all items on the server are presented as new items every time the guest account logs on (the server does not remember a Last Call date and time for guest accounts), whereas, with a regular account, NovaServer tracks which items the user has already read or downloaded.

Guest accounts do not remember the name of individual callers. You might want to set up a survey script to ask guests to enter their real name, and perhaps other information, for your later review. See Chapter 6, "Enhancing Your Server with NovaScript," for more information on creating a survey. You can use a statement like `if user is 2` (using your Guest account's number) to execute the script only when your guest account logs on.

ALLOWING USERS TO CREATE THEIR OWN ACCOUNTS

You can allow users to create their own accounts by making sure the Private Board (No New Users) checkbox, in the Accounts panel of the Server Options window, is deactivated. (To display the Server Options window, choose Options from the Setup menu.) Users who log on as New are prompted for their account information and assigned the access levels specified in the New User fields of the Access Levels panel, along with the expire time, daily time limit, and Web access specified in the Accounts panel. Since some unscrupulous users may attempt to gain unauthorized entry to your for-pay server, or sign up under a false name to wreak havoc, we suggest setting a low initial daily time limit, along with a low initial access level, to prevent such users from posting in the message forums or downloading files before they have been verified.

Users who create their own accounts are flagged as non-verified users to give you the opportunity to review all new accounts and to make sure that the account information the user has entered is reasonable. Some security-conscious system operators take the added precaution of telephoning some or all of their new users to ensure that a valid voice phone number is available. (Bogus users usually provide a false voice number or other inaccurate contact information.) When you have determined to your satisfaction that the new account record is a valid one, you can change the user's access level to allow them full access to the server, increase their time limit, and mark them as a verified user.

To verify new users:

- 1 Log on to your server using an account that has access to a Tree element on your server, such as the Sysop account.**

You may log on in text mode from the server itself by choosing a Local terminal node from the Windows menu to open a terminal window, then choosing Logon Local from the Terminal menu, or you may log on over the network or with a modem using a text-based terminal program.

- 2 Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu, shown on the next page, appears.

Remote Operation Commands (See manual for complete list of commands)

```
=====
EU...Edit User                F....Force Hangup
ESS...Edit Server Sites      ESO...Edit Server Outgoing Mail
ESE...Edit Server Nodes      ESV...Edit Server Verify Users
ESA...Edit Server Access Levels
ESP...Edit Server Parameters
ESF...Edit Server Flags (Options)
ESZ...Edit Server Zone List
EO...Edit Server Options
MO...Move Out of Tree        T....Turn Tree into a Menu
=====
```

Command:

3 Type **ESV** and press **Return**.

The words **Edit Server Verify users** appear on the screen as you type **ESV**. After you press **Return**, the first unverified account record appears, as shown below.

```
Edit User Account #5                A) Handle:Mark Wong
=====
B) First:Mark                       C) Last:Wong
D) Address:935 Vista del Sol
+) Country:
=) City:Los Angeles                 F) State:CA
G) ZIP Code:90056                  H) Phone:714/555-8150
I) Acc. Password:*****           L) Max time per day:0 mins.
M) AppleTalk mail notification?No  N) Download limit:0k
O) Access Level:100 : 100 : 100 : 100

P) Total uploaded:0k                Q) Total downloaded:0k
R) Uploads:0                        S) Downloads:0
T) Computer type:                   U) First call:4:09:53 PM 8/28/95
V) Total calls:0                    W) Last call:4:09:53 PM 8/28/95
X) Mail Sent:0                      Y) Public Posts:0
Z) Time used on last call date:0m   #) Guest account?No

1) Delete this user  2) User DB File  3) Verify user
E) Exit (or press return)
*) Redraw the display

(A thru Z, 1, 2, 3, +, =, *, #)?:
```

- 4 **Edit the user's access level and time limits as desired by choosing the appropriate options from the menu and entering new values.**
- 5 **Press the 3 key to mark the user's account as verified, then press Return.**

The next unverified user account, if any, is displayed.

- 6 **If there are additional new accounts to be verified, return to step 4. Otherwise, type MO to Move Out of the tree.**

The menu containing the Tree component is displayed. At this point, you may log off the server as usual.

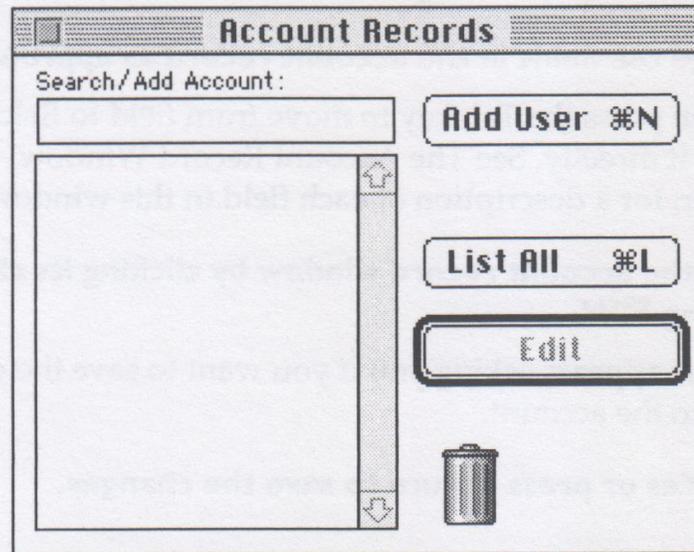
EDITING EXISTING ACCOUNTS

For security reasons, users cannot change most of their own account information (only their password). Therefore, the system operator or a moderator must make most changes to accounts.

To edit accounts:

1 Choose Accounts from the Setup menu.

The Account Records window (below) appears.



2 Type the full or partial (at least three-character) screen name, or handle, of the account you wish to edit in the Search/Add Account field and wait a few seconds, or click the List All button to see all accounts.

All accounts with screen names that contain the characters you entered appears in the account list.

3 Double-click the desired account in the account list.

The user's account record window (next page) appears.

Robert Mason	
First: Robert	Last: Mason
Handle: Robert Mason	
Company: Central High School	
Address: 1200 Woodward Ave.	
City: Detroit	State: MI
Zip: 48230	Phone: 313/555-1414
Password: ●●●●●●	Level: 100 100 100 100
Uploads: 0	Calls: 0
Downloads: 0	Posts: 0
Time/day: 60	K DId: 0
<input checked="" type="checkbox"/> Verified <input type="checkbox"/> Use NS Notifier First Call: 8/28/95 Account ID: 4	
Text Emulation: VT100 Web Access: Default Allow Account License: Universal <input checked="" type="checkbox"/> Account Expires: Mth. Day Year: 1 / 1 / 99 <input type="checkbox"/> Expiration Active	

4 Change the fields in the account record as appropriate.

You can press the Tab key to move from field to field, or click a field to edit it directly. See The Account Record Window, later in this chapter, for a description of each field in this window.

5 Close the account record window by clicking its close box or by pressing ⌘W.

An alert appears asking you if you want to save the changes you made to the account.

6 Click Yes or press Return to save the changes.

THE ACCOUNT RECORD WINDOW

When you create or edit an account, the account record window, below, appears.

DOR	
First:	Last:
Handle:	
Company:	
Address:	
City:	State:
Zip:	Phone:
Password: ●●●●●●	Level: 100 100 100 100
Uploads: 0	Calls: 0
Downloads: 0	Posts: 0
Time/day: 30	K DId: 0
<input type="checkbox"/> Verified <input type="checkbox"/> Use NS Notifier First Call: 8/28/95 Account ID: 6	
Text Emulation: VT100 Web Access: Default Allow Account License: Universal <input checked="" type="checkbox"/> Account Expires: Mth. Day Year: 1 / 1 / 99 <input type="checkbox"/> Expiration Active	

First/Last Name. The user's first and last name, for identification purposes only. Users actually log on using their handle, or screen name, described below.

Handle. The user's screen name or account ID. The user uses the account ID to identify himself to the server; it may be an abbreviation of the user's name, a nickname, or anything else the user chooses and that the system operator finds acceptable.

Company. The user's company (can also be used for a school name or other organizational affiliation).

Address/City/State/Zip. The user's mailing address, useful for sending the user a new information packet or for contacting them if other methods fail.

Phone. The user's voice phone number, useful for voice validation. With voice validation, the system operator or a moderator calls each new user to verify that they have entered correct information when signing up for an account.

Password. The user's password, used to gain access to the server. You should impress upon your users the importance of choosing a secure password and changing it regularly—even if your server has free access. (You can allow users to change their own passwords by including a Change Password component in your server's Utilities menu.) There is no way for even the system operator to find out what a user's password is—all you can do is change it. For security reasons, when you open an account record, passwords are displayed as six bullets (•), regardless of the number of characters actually in the user's password. Inside NovaServer, passwords are stored using Internet-standard MD5 encryption.

- *Passwords are case-sensitive. If you change a user's password, make sure the user knows which letters are uppercase and which are lowercase.*

Level. The user's access level, which is used to control the parts of the server the user can use and what actions he or she can take. Broad categories of user privileges, along with the default access level for new accounts, are defined in the Access Levels panel of the Server Options window (see "Account Options," earlier in this chapter). Each component of your server can also have an access level and, for some types of component, a separate write access level (see Chapter 4, "Creating Your Server's Menu Structure"). When NovaServer compares a user's access level to the access level required for a particular component or function, each of the four separate fields in the user's access level must be greater than or equal to the corresponding field of the required access level.

Uploads/Downloads. The number of uploads (or downloads) the user has made to (or from) file libraries on this server. These fields are automatically updated by NovaServer, but can also be updated manually by the system operator (for example, to reset the value to zero).

Calls/Posts. The number of calls the user has made to the server, and the number of messages the user has posted to message forums on the server, respectively. These fields are automatically updated by NovaServer, but can also be updated manually by the system operator (for example, to reset the value to zero).

Time/day. The total number of minutes the user is permitted to use the server per day. Each call is tracked individually, and if the total number of calls to a server in a 24-hour period exceeds this amount, the user's access to the server is disabled until the next day. If this field is zero, no time-per-day limit is imposed.

K DId. The total number of kilobytes downloaded by the user from the server's file libraries. This field is automatically updated by NovaServer, but can also be updated manually by the system operator (for example, to reset the value to zero).

Verified. Activated if the user has been verified by the system operator; deactivated if the account has not been verified. Unverified users must be verified before they can make their second call. See "Allowing Users to Create Their Own Accounts," earlier in this chapter, for information on validating new users.

Use NS Notifier. Activate this checkbox if the user is in the same zone of an AppleTalk network as the server and is running the NS Notifier extension. The NS Notifier extension allows the user to receive notification that new electronic mail has arrived at his or her account, even if he or she is not logged on to the server at the time (or, in fact, is not even running NovaTerm).

Text Emulation. Indicates which terminal emulation (TTY, VT100, or ANSI) the user has specified when calling the server in text mode (that is, without NovaTerm). You can allow users to change this setting for themselves by including a Terminal Settings component in your server's Utilities menu.

Web Access. Allows you to specify the sites on the World Wide Web the user can visit (assuming you have licensed the Web Out option for your NovaServer). You may allow users to visit any site (Full Access), no sites (None), all but the sites you have specifically blocked access to (Default Allow), or no sites but the ones you have specifically permitted access to (Default Deny). See Chapter 12, "Networking With The Internet," for more details on creating a database of allowed or blocked Web sites.

Account License. Determines the platforms on which this user is licensed to use NovaTerm. Each NovaServer is licensed to communicate with a certain number of users who use NovaTerm for Macintosh and Windows; this pop-up menu allows you to manage how many of each type of license is in use at any time. (The Account Usage panel in the Server Options window—choose Options from the Setup menu—allows you to review the status of your license.) The available Account License options include:

- **Universal.** User may log on using any text-based emulation (TTY/VT100/ANSI), RIP, or NovaTerm for Macintosh or Windows on a modem node, through your LAN, or over the Internet.
- **Modem Only.** User may log on using any text-based emulation (TTY/VT100/ANSI), RIP, or NovaTerm for Macintosh or Windows on a modem node only.
- **Mac Universal.** User may log on using NovaTerm for Macintosh, but not a text-based emulation or RIP, on a modem node, through your LAN, or over the Internet.
- **Mac Modem Only.** User may log on using NovaTerm for Macintosh, but not a text-based emulation or RIP, on a modem node only.
- **Windows Universal.** User may log on using NovaTerm for Windows, but not a text-based emulation or RIP, on a modem node, through your LAN, or over the Internet.
- **Windows Modem Only.** User may log on using NovaTerm for Windows, but not a text-based emulation or RIP, on a modem node only.
- **Guest Account.** Same connectivity options as Universal license. However, a Guest Account may be used simultaneously by several different users and does not remember the read/unread status of server items. See "Creating a Guest Account," earlier in this chapter.

Account Expires. The date the account expires, initially determined by the Default Expire Time in the Accounts panel of the Server Options window (see "Account Options," earlier in this chapter.) You can later edit the expiration date on an account-by-account basis. The expiration date is not effective unless the Expiration Active checkbox below the expiration date is activated. If you run a for-profit information server, you can use the expiration feature to automatically cut off users who haven't paid by moving their account expiration date forward a month whenever you receive a month's payment. If the Auto-delete Expired Accounts checkbox in the Accounts panel is activated, accounts are automatically deleted when they expire; otherwise, these users are merely prevented from logging on.

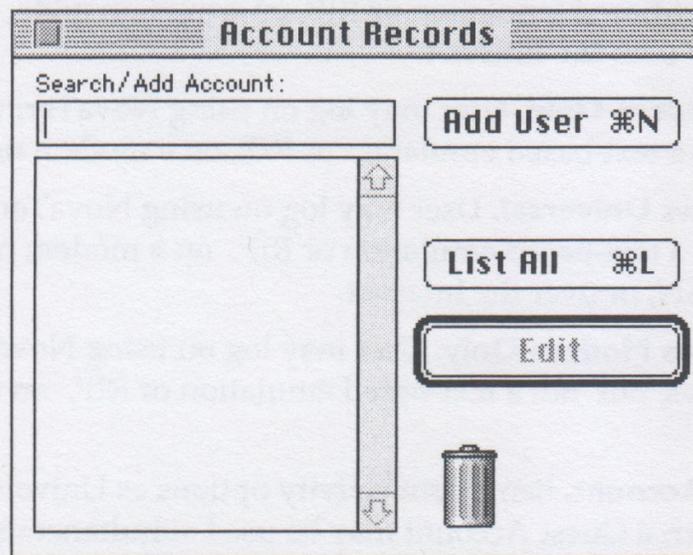
DELETING ACCOUNTS

- *Deleting an account also deletes the account's associated mailbox. Mail from deleted accounts cannot be recovered even if the account is re-established.*

To delete an account:

- I **Choose Accounts from the Setup menu.**

The Account Records window (below) appears.



- 2 Type the full or partial (at least three-character) screen name, or handle, of the account you wish to edit in the Search/Add Account field and wait a few seconds, or click the List All button to see all accounts.**

All accounts with screen names containing the characters you entered appear in the account list.

- 3 Drag the account to be deleted from account list to the Trash icon in the Account Records window (not the Finder's Trash icon).**

NovaServer ask you to confirm that you actually want to delete the selected account.

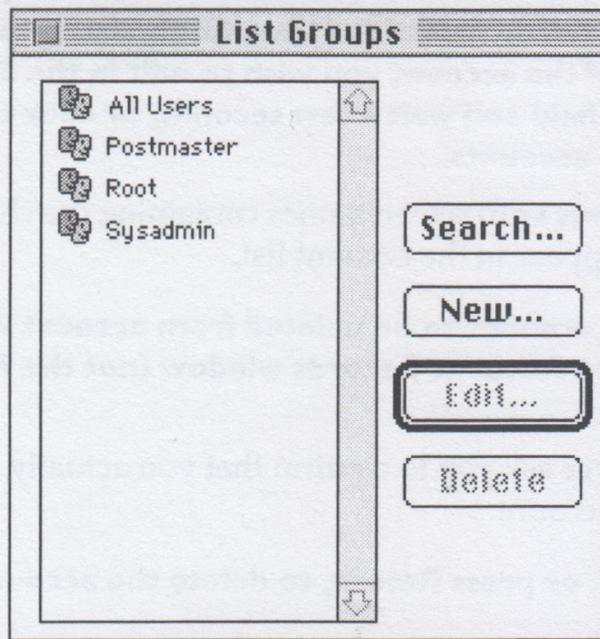
- 4 Click OK, or press Return, to delete the account.**

- 5 To delete additional accounts that already appear in the accounts list, return to step 3. To delete additional accounts that do not appear in the accounts list, press Tab to move the cursor to the Search/Add Account field and return to step 2.**

CREATING AND MAINTAINING GROUPS

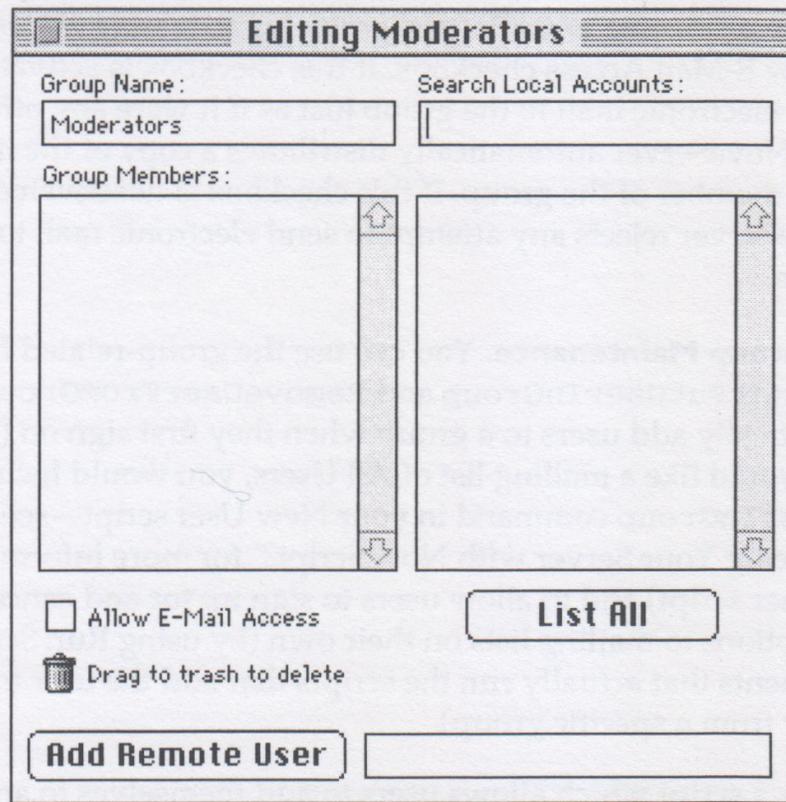
NovaServer's account database supports the creation of *groups*—lists of users with some access privilege in common. Groups can be used for two purposes: to allow users access to certain parts of the server by entering the group name in the Access Group or Moderator Group field in a server component (see Chapter 4, "Creating Your Server's Menu Structure"), and to distribute mail to a number of users without having to specify each user's name. In the latter case, electronic mail can be addressed to the group name, and NovaServer automatically distributes a copy of the message to each user in the group.

To create, modify, or delete a group, open the List Groups window, shown on the next page, by choosing Groups from the Setup menu.



From the List Groups window you may perform the following functions:

- **Find a particular group** by clicking the Search button and entering the full or partial group name. The next group whose name contains the text you entered is highlighted.
- **Create a new group** by clicking New and entering a name for the group. The Editing Group window (next page) appears.
- **Edit an existing group** by double-clicking the name of the group (or by clicking it once, then clicking Edit). The Editing Group window (next page) appears.
- **Delete a group** by clicking it once, then clicking Delete. You are asked to confirm the deletion.



From the Editing Group window you may perform the following functions:

- **Search your user list** by typing at least three characters into the Search Local Users field, then pausing for a moment. As in the Account Records window, all users and groups whose names contain the text you type appears in the list.
- **Display your entire user list** by clicking List All.
- **Add local users to the group** by dragging them from the Local Users list (on the right side of the window) into the Group Members list (on the left side of the window). You may add both individual users and other groups.
- **Add a remote user** (a user who does not have an account on the server) to the group by entering the user's electronic mail address in the field at the bottom of the window, then clicking Add Remote User. You should also make sure that the Allow E-Mail Access checkbox (described below) is activated; remote users have no reason to be in a group that cannot received mail.
- **Delete a user from the group** by dragging an account name from the Group Members list to the Trash icon in the Editing Group window (not the Finder's Trash). You are asked to confirm the deletion.

- **Allow or disable e-mail** to the group by activating or deactivating the Allow E-Mail Access checkbox. If this checkbox is activated, users can send electronic mail to the group just as if it were any other account, and NovaServer automatically distributes a copy of the message to each member of the group. If this checkbox is deactivated, NovaServer rejects any attempt to send electronic mail to the group name.

Scripting Group Maintenance. You can use the group-related NovaScript commands `PutUserInGroup` and `RemoveUserFromGroup` to automatically add users to a group when they first sign on (for example, if you would like a mailing list of All Users, you would include a `PutUserInGroup` command in your New User script—see Chapter 6, “Enhancing Your Server with NovaScript,” for more information on the New User script) and to allow users to sign up for and cancel their subscriptions to mailing lists on their own (by using Run Script components that actually run the scripts that add the user to or remove the user from a specific group).

Below is a script which allows users to add themselves to and remove themselves from the group `MailingList`. (The group should already be defined and have its Allow E-Mail Access checkbox activated.) To use the script, place it in the script vault as `ManageList` (select Scripts from the Setup menu to access the vault), then add a Run Script component to an appropriate menu on your server to run the `ManageList` script.

ManageList

- `if memberOf "MailingList"`

You are currently a member of the mailing list.

- `if ask "Unsubscribe from the list?"`
- `removeUserFromGroup "MailingList"`
- `end if`
- `else`

You are not currently a member of the mailing list.

- `if ask "Subscribe to the list?"`
- `putUserInGroup "MailingList"`
- `end if`
- `end if`

.....

MAINTAINING & MANAGING YOUR SERVER

- *In this chapter, you'll learn how to manage and maintain the information stored on your NovaServer.*

SERVER MANAGEMENT BASICS

While NovaServer has many features—such as the account management system discussed in the last chapter—designed to help you, the system operator, manage your server, many tasks are too important to be handled by the server alone. You and your moderators need to keep a watchful eye on your server's information content, particularly areas where callers can participate, including message forums and file libraries.

Depending on the services you choose to provide and the rules you choose to establish for participation on your server, you may find it necessary to direct discussions, delete off-topic messages (or move them to the proper area), cool down heated discussions, remove illegally copied software from your file libraries, and more.

In short, you can't simply set up a NovaServer and expect every message forum and file library to run itself—not just because the software itself doesn't have that capability, but because a successful server involves the interaction of human beings. We all know that the management of human beings is one thing that cannot presently be effectively automated (although we fear that somewhere, someone's working on it). Human beings post messages in the wrong place by mistake, they take offense at other people's messages where none was intended, and some even strive to undermine your authority in subtle (or not-so-subtle) ways. Managing your server is as much an exercise in managing your users (and your assistants) as it is an exercise in manipulating software.

You may, of course, adopt any management style that suits you. If you are running the server to make a profit, you will probably manage it differently from someone who is running a server just for fun, or as a class project for school. But regardless of why you run your NovaServer, by far the best systems we've seen are run by people who care—people who take an active role in leading discussions, building software libraries, and so on. If the server is being run by a business as a point of contact with the public, it's vital that everyone throughout the company, particularly management, use the server regularly.

Commitment and dedication are values that are immediately obvious to the users of your server—as is the sense of going above and beyond what is expected. A little extra work, coupled with some creative thought, can be the key to customer satisfaction. If you are running your server for profit, a satisfied customer means revenue you can rely on (it's almost always cheaper to keep the customers you already have than to find new ones). And even if you're not running your server for profit, satisfied customers can boost your reputation and your image.

While your server may specialize in providing one type of information, be aware that your callers may be interested in other topics as well, and that they might call more frequently and stay online longer if they find other information that intrigues them.

Throughout this chapter we discuss both the technical issues (that is, how to perform a given maintenance task using NovaServer) and the possible ramifications of certain actions you may take while running the server. Note that a discussion of a particular issue related to an action or style of management is not necessarily an endorsement of that style of management. However you choose to manage your server is perfectly all right with us—we will never tell you how to run your server—but we think you can make better choices if you understand all the issues.

LEGAL ISSUES

While there are no legal issues involved in using the NovaServer software itself, as long as you've paid for it, there *are* legal issues involved in managing your information service. Ten years ago we wouldn't have even needed to mention any of this at all, but today, the public is more aware than ever of information services. The Internet and online services are constantly in the news—frequently in an unfavorable light—and, in today's society, legal action is more prevalent than it ever has been, especially in the online world as more big companies get online and start protecting their copyrights and trademarks.

In this section, we touch briefly on issues facing system operators in the United States. If you live elsewhere, you may face similar issues, but you should check with a legal expert in your country before taking any of our advice. In fact, even if you do live in the United States, we advise you to speak with an attorney for more in-depth consultation regarding these issues, especially if you are setting up a for-profit information server.

Censorship. Almost every system operator eventually runs across an obnoxious user who spews hatred or obscenity across the server, and at some point, you may find it necessary to delete a user's message or account from your server. This may result in the accusation of censorship. It's important to realize that you are well within your legal rights to delete anyone's messages or account from your server, *even without a reason*. As the operator of an information server, you are the sole authority on what is and is not acceptable on your system. After all, it's your hardware, and your software, *even if others are paying you to use it*. Freedom of speech does not mean that a newspaper must publish, at its expense, any opinion submitted to it, even if the submitter is a paying subscriber; neither does it mean that you must tolerate on your server anything you don't want there. People who disagree with your policies are free to start their own information server, so your deletion of their messages or accounts does not abridge their right to free speech. To prevent hard feelings, however, it is best to make clear to your users in advance exactly what behavior is unacceptable.

Privacy. As the system operator, you have the capability to read any user's electronic mail if you so desire, and, in fact, you may wish to use this capability occasionally if you receive a report from a user who is being harassed by another user, or if you notice copyrighted software in the Mail Attachments folder (which might indicate that users are mailing pirated software to each other). You should make it clear to your users that although you do not habitually read others' electronic mail, you do have that capability and may use it from time to time if, in your opinion, the evidence warrants it.

Copyright. From a strictly legal standpoint, you should not allow files to be uploaded to your server's file libraries without permission from the copyright holder (usually the author or publisher of the information). Any creative work, from software to music to graphics to text, could be copyrighted, even if it does not include an explicit copyright notice. Some programs (such as demonstration versions of commercial software, and so-called freeware and shareware programs) are clearly intended to be freely distributable, even though they are copyrighted.

Some files, though, such as sound samples from movies or television shows, are also copyrighted, even though users frequently distribute these files without much regard for their ownership. Distributing such files is so commonplace that you may fear that your server will cease to be popular if you don't allow them to be uploaded, but it takes only one lawsuit from a large corporation to put your server out of business. Even if you know (or think you know) that these companies don't have a case, the legal fees and bad publicity you can rack up defending yourself from a copyright lawsuit are staggering. As traditional media publishers start to create their own online presence, they are becoming more and more vigilant in defending their copyrights. The most effective way to avoid lawsuits is to simply stay out of the spotlight by adhering strictly to the law and shying away from gray areas like this one.

Trademarks. You should be careful, especially if you're running a commercial server, that the names and logos of the services and products you provide do not conflict with any other available similar products. Even if your business specializes in consulting and support for Microsoft products, for example, you should not use the word Microsoft in the name of your service. You should be scrupulous about acknowledging the trademarks of other companies when you talk about their products; this sets the precedent that you are concerned with trademarks, and generates good will should you inadvertently misuse someone else's trademarks. (In other words, it makes companies less likely to sue first and ask questions later if they can tell you are making an effort to stay clean.)

Libel. If one of your users calls a local newscaster a child molester without proof, that's libel. The user who posted that message can likely be sued for posting it, and it's possible that, if you refused to remove the message even though you knew it was libelous, you could be held accountable as well. It's important that you make clear to your users that libel is a crime, and that you intend to cooperate fully with anyone who feels that they have been unfairly accused by a user of your server.

Liability. If you routinely check your server's file libraries for viruses, and despite your best efforts, a virus from one of your files erases a user's hard drive, can you be held legally accountable for it? More to the point, a recent court case against Prodigy[®] asked: If a user posts a libelous message and you do nothing to stop it, can you be sued?

Interestingly, the answer seems to be that you can, in fact, be held liable, if you have a strictly-enforced policy on message content. In the Prodigy case, Prodigy's staff reviews each message before it is posted; the judge therefore determined that they were negligent in allowing the libelous messages to be posted. In a similar, earlier, case against CompuServe, the industry giant was found not to be accountable because CompuServe does not similarly review every message *before it is posted*.

In any case, a good liability disclaimer is, unfortunately, an important part of the online business these days. If you are running a server for profit, you should definitely include in your user agreement a disclaimer that all information is provided as-is and that it is not guaranteed to be perfect in every way, and that you furthermore intend to cooperate in rectifying any improper situation (copyrighted files, libel, and so on) upon being informed of the problem.

Pornography. At this writing, computer pornography is under attack. Child pornography is, of course, illegal in every state, but other types of adult-oriented material are legal in many communities. At least one adult bulletin board system has been shut down for delivering pornography over long-distance telephone lines to a user in a community where it was considered indecent, even though the BBS itself was located in a community where it was not considered indecent.

Legislation that would make system operators responsible for the Internet materials accessed by their users is currently under consideration by Congress, and a recent (purportedly flawed but nevertheless shocking) study on the extent of pornography on the Internet sparked a cover story in Time magazine. While many claim the problem of pornography on the Internet is nowhere near as severe as others have made it out to be, this issue will definitely see much more attention before it's settled. Count on it. These days, running an adults-only BBS may be risky.

Anarchy or terrorism information. Due to the Oklahoma City incident early in 1995, this sort of information is becoming the target of the same intense scrutiny that adult material has always enjoyed. Not only that, but much of the popular anarchy information available is simply incorrect, and could lead to serious injury to the user, for which you could, conceivably, be held liable. Again, providing this kind of information may be risky.

User agreements. You may wish to draw up a User Agreement (sometimes called an Acceptable Use Policy) for your server, especially if you're running it for profit. In this document, you define what behavior you consider acceptable, and what measures you may take if a user's behavior becomes unacceptable. Not only does this make your job easier by making sure your users know what you consider proper behavior, it also can help keep you in the clear with respect to liability. You can present this information to new users during their first call and ask them to accept it if they wish to continue using your server; there's no need to send them an actual piece of paper.

The Appendix to this manual shows a sample user agreement. Even if you choose to write your own, ours may serve as a good starting point. The policy we outline is rather strict—some might even say overly restrictive—but it does provide maximum legal protection for you. Some system operators may choose to be more lenient. It is unlikely, after all, that a small, free community BBS would get into serious legal trouble for having a few Star Trek sounds in its library. If you are operating your service for profit, you run a much higher risk of being targeted for a lawsuit. You should, of course, contact a lawyer before adopting our or any other user agreement.

ASSIGNING MODERATORS

There's no need to do all the work of maintaining your server alone. NovaServer allows you to assign moderators to specific message forums and file libraries throughout your server. You can give individuals (or groups of individuals) system operator privileges in one or a few forums or libraries, allowing them to delete messages and files, release newly uploaded files, and move files from one library to another in that area only.

Because you are delegating some of your decision-making power to others, crystal-clear understanding between you and your moderators of what is acceptable and what is unacceptable is vital. Your users should never see you and your staff disagree publicly on a matter of policy. A written policy statement (for internal use only) clearly delineating what your moderators may and may not do is an excellent idea.

Once you have selected your moderators, you need to give them access privileges. You can do this in any of three ways:

- Give them full Sysop-level access (1000, 1000, 1000, 1000). This gives them as much power as the system operator. If you're running a large system, it may be a good idea to give one or two trusted individuals besides yourself this level of access, to back you up when you're unavailable and to assist in server-wide maintenance tasks. However, be *very careful* who you give this access level to! A user with Sysop-level access can download or even delete any file on your hard drive, including NovaServer files such as the Account database. Many system operators prefer not to give anyone besides themselves this much power and instead give them system-wide Delete privileges, or give them moderator privileges in a specific forum or library.
- Give them system-wide Delete privileges (900, 900, 900, 900). These assistants get the power to remove inflammatory messages across the server, but are unable to release or move files or perform remote maintenance.
- Give them moderator powers in only a few message forums or file libraries. You do this by entering their account ID in the Moderator Group field of the appropriate forum or library. If you want more than one person to have moderator powers in a particular area, create a group containing the account IDs of the people to whom you wish to grant this privilege (see Chapter 7, "Managing your Accounts," for more information on creating groups), entering the group's name in the Moderator Group field.

MODERATING MESSAGE FORUMS

Message forums are largely self-maintaining, since old messages can be (and usually are) deleted automatically. (Some system operators prefer to do this task manually, at least in certain areas, to ensure that introductory messages and other vital information are retained. You can prevent NovaServer from automatically deleting old messages from message forums by entering a zero in the Purge After field of the appropriate message forum component.)

Your moderators should be on the lookout for inflammatory messages (or more specifically, violations of your server's user agreement). Depending on how much power you have delegated to your moderators, you can permit them to delete such messages themselves. Deleting a message or file is a simple operation—just click the Delete button at the top of the NovaTerm window, or press the κ (for Kill) key if you're using the server in text mode. However, once a message has been deleted, it cannot be retrieved. Because of this finality, you may instead instruct your moderators to report the messages to you or your assistants for review, or to at least save a copy of each deleted message.

Moderators should also keep an eye out for files attached to messages in their assigned message forums. Like files in file libraries, files attached to messages must be released before they can be downloaded by normal users. This gives you the opportunity to check the file before it's released publicly, to make sure that it is not a copyright violation, decompresses properly, runs (if it's a program), and contains no viruses. Messages with attached files include a Release button, visible only to moderators, and a Download button, available only to moderators until the file has been released with the Release button. Depending on your policy, you might simply choose to release the file without even downloading it first, and making sure your users know that you don't examine attached files in message forums to the same extent that you inspect files in file libraries.

In addition to performing these basic administrative tasks, your moderators might also be responsible for directing discussions in their message forums (and suggesting that participants move to another forum when the forum strays too far from the forum's designated topic). They might also be responsible for generating continued interest in their area by starting new discussions and remaining a visible part of the server's activities.

MODERATING FILE LIBRARIES

File libraries are, for the most part, not at all self-maintaining. It is up to the system operator or his moderators to ensure that the files in each library are maintained properly. Maintaining file libraries can be a lot of work, but if you run your server for profit, it's worth knowing that well-maintained libraries can be excellent revenue generators. What does *proper maintenance* mean? On the next page are a few ideas of the characteristics of a properly-maintained file library.

- **Free of copyright violations.** See “Legal Issues” earlier in this chapter for a complete rundown of copyright issues involved in running your information server.
- **Up-to-date.** One of the most valuable services you can offer users of your server is a library of current versions of software. Unfortunately, it’s also one of the most labor-intensive. If you run America Online, people bring all the latest software right to your doorstep—but, unfortunately, if you’re running a smaller operation, you (or your assistants) may have to hunt for it and upload it yourselves. An Internet account and a good working knowledge of popular FTP sites will serve your efforts well.
- **Functional.** It’s inevitable that some of the files your users upload to the library won’t work properly. It’s up to you and your staff to download each file to make sure it can be unpacked and that it runs correctly. This is another valuable service you can offer to users—files that work properly the first time!
- **Free of viruses.** The threat of infection and data loss caused by computer viruses is a very real one in the minds of many users today. By checking all the files in your library to make sure they don’t contain any vermin, you provide a service many users are willing to pay for.

When your moderators open a file library that contains newly uploaded files, the names of the unreleased files in italics are displayed in italic text. Only moderators can see these italicized files; they remain hidden to other users until they have been released. Releasing a file is as simple as clicking the Release button; deleting a file is as simple as clicking the Delete button. (To save space on your server, you may want to delete files that aren’t going to be released.)

- *The Release New Uploads, Enforce Download Limits, and Auto-Delete Killed Files checkboxes in the General panel of the Server Options window can be of great assistance in managing your libraries when used judiciously. Choose Options from the Setup menu to use this panel.*

MANAGING OTHER SERVER ELEMENTS

In addition to message forums and file libraries, there are a number of other components on your NovaServer that you should check and update on a regular basis, such as Welcome messages and one-time bulletins. Particularly important are pointers to resources that are stored outside your server on the Internet. Internet resources have a way of vanishing or changing addresses without notice, and unless you are constantly monitoring them, your users may run across missing resources before you do. Be sure to check all Connect Out and Get URL components, as well as hotlinks in your HTML documents, requestURL statements in scripts, and even AppleSearch sources that connect to WAIS (Wide Area Information Service) servers on the Internet.

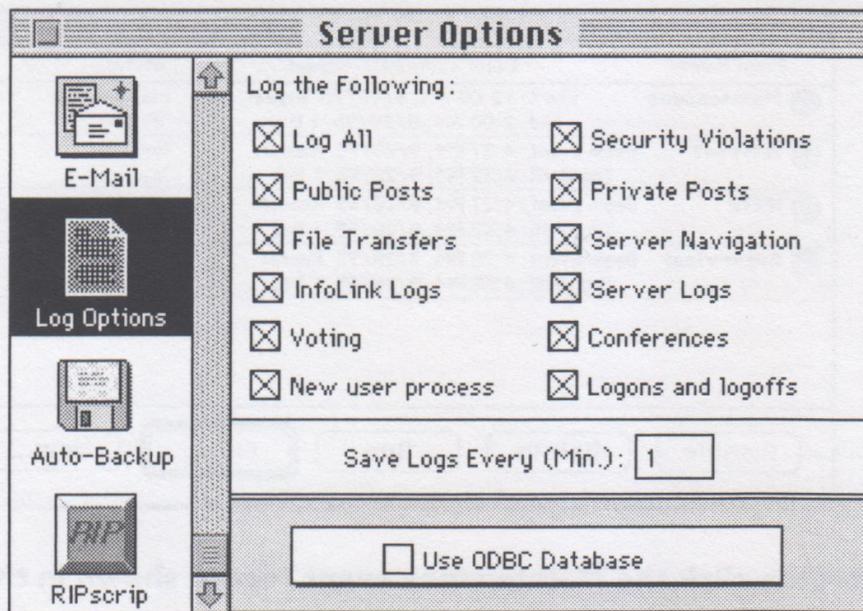
GENERAL MAINTENANCE

Up to this point, we've discussed mainly things you need to do to keep the information on your NovaServer up-to-date. You should also do all the things you do to any computer system to keep it running smoothly, including backing up the server's hard drive and checking it for data corruption and viruses. Here are some pointers.

Logs. NovaServer keeps a record of virtually every activity which occurs on the server. View your logs regularly by choosing Usage Log, Server Log, and InfoLink Log from the File menu. (The Error Log is automatically displayed whenever an error occurs.)

- **Usage Log.** Contains the details of what each user of your server did from the time they connected until the time they logged off.
- **Server Log.** Contains information on server activities, recording the time of each startup, shutdown, and event.
- **InfoLink Log.** Contains information on network activities, including InfoLink, SMTP, and NNTP gateway activity.
- **Error Log.** Records every problem or error NovaServer encounters during server operation, and is the first place you should check when troubleshooting.

You can specify which types of activities are logged in the Usage Log using the Log Options panel of the Server Options window, shown on the next page (choose Options from the Setup menu).



Individual file libraries can also be set to maintain logs of their activity by activating the Audit Uploads or Audit Downloads checkbox in the individual Library component.

All logs are stored in the NS Logs folder. The main system logs are stored in the appropriate sub-folder of this folder; file library logs are stored in the NS Logs folder.

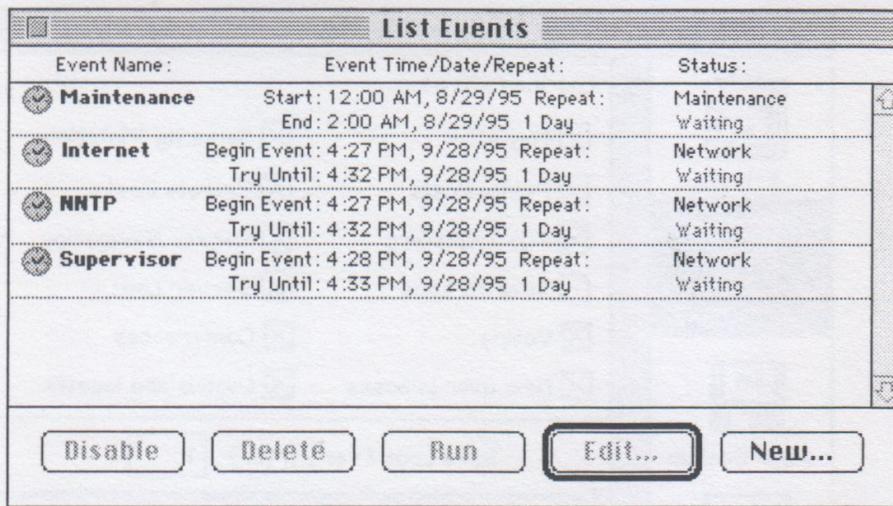
NovaServer automatically starts a new log file every day for the Usage, Server, InfoLink, and Error logs. Periodically, you should delete old logs from the NS Logs folder, especially if your server is extremely busy and generates large log files.

Maintenance Events. The default NovaServer configuration runs a maintenance event every day. Maintenance events reclaim disk space formerly used by deleted messages and files and perform general clean-up of the server's files. NovaServer actually does this all day (particularly when no one's logged on to your server); the Maintenance event tells the server that it should give more priority to the job, even at the expense of responsiveness to your callers.

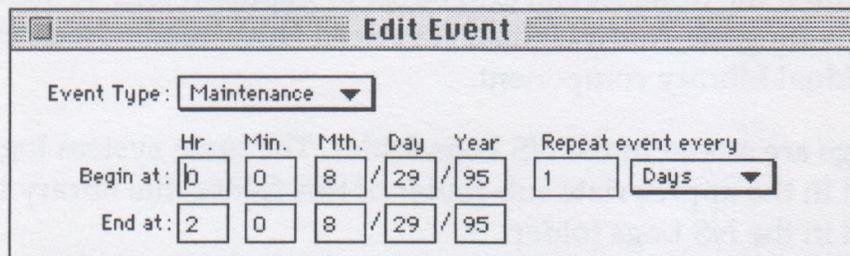
To edit the default maintenance event:

I Choose Events from the Setup menu.

The List Events window, shown on the next page, appears.



- 2 Double-click the Maintenance event record shown in the window.**
The Edit Event window, below, appears.

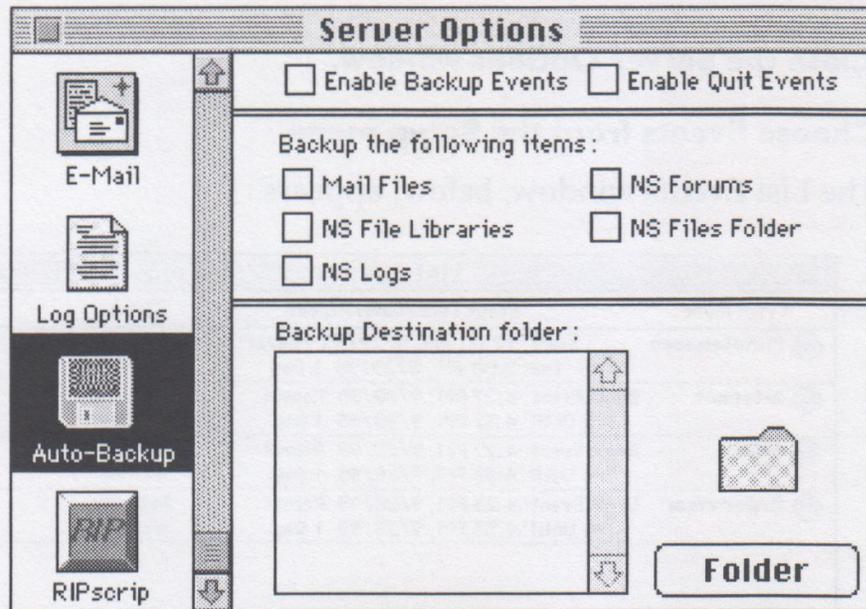


- 3 Enter the times for the beginning and ending of the maintenance period into the appropriate fields.**
Times are entered in 24-hour (European or Military) format, with 00:00 equivalent to midnight and 23:00 equivalent to 11:00 PM. You should set your Maintenance events to run at times when you know few people use the server, as it can have a significant impact on performance. You should avoid overlapping the times of your Maintenance event with the times of your Backup event. We suggest at least a two-hour maintenance period (longer on large servers).
- 4 Make sure the Repeat Event field contains a 1 and make sure that the pop-up menu next to it reads Days.**
This causes the Maintenance event to be executed every day at the time you specified in step 3.
- 5 Close the Edit Event window.**
NovaServer asks if you would like to save the event.
- 6 Click Yes to save the new event.**
- 7 Close the List Events window.**

Backups. Regular backups are your best protection against viruses, data corruption, and hard drive failure. NovaServer has a built-in background backup system that can back up the server to a second hard drive while it's running, so you don't need to stop the server to make a backup. To activate this feature:

1 Choose Options from the Setup menu.

The Server Options window, below, appears.



2 If the Auto-Backup panel is not open (as shown above), click the Auto-Backup icon on the left side of the window.

The Auto-Backup panel appears.

3 If the Enable Backup Events checkbox is deactivated, click it to activate it.

4 Activate the checkboxes for the parts of the server you wish to back up.

Items you can back up include mailboxes, file libraries (descriptions only—the files themselves are stored in the NS Files folder), logs, message forums, and/or the files in the NS Files folder.

- 5 **Click the Folder button to specify the drive or folder you wish to back up to.**

You can back up the server to any mounted disk volume (or even to a different folder on the volume containing the NovaServer application). For performance reasons, we recommend backing up to another hard drive rather than to a shared network volume; users do experience somewhat decreased performance while a backup is in progress, but the performance drop is worse when backing up over a network.

- 6 **Close the Server Options window.**
- 7 **Choose Events from the Setup menu.**

The List Events window, below, appears.

Event Name:	Event Time/Date/Repeat:	Status:
Maintenance	Start: 12:00 AM, 8/29/95 Repeat: End: 2:00 AM, 8/29/95 1 Day	Maintenance Waiting
Internet	Begin Event: 4:27 PM, 9/28/95 Repeat: Try Until: 4:32 PM, 9/28/95 1 Day	Network Waiting
NNTP	Begin Event: 4:27 PM, 9/28/95 Repeat: Try Until: 4:32 PM, 9/28/95 1 Day	Network Waiting
Supervisor	Begin Event: 4:28 PM, 9/28/95 Repeat: Try Until: 4:33 PM, 9/28/95 1 Day	Network Waiting

Buttons: Disable, Delete, Run, **Edit...**, New...

- 8 **Click the New button to add a new event.**
- 9 **Choose Backup from the Event Type pop-up menu.**

The New Event window appears.

The New Event window appears as shown below.

New Event

Event Type: Backup

Warn nodes at: Hr. Min. Mth. Day Year Repeat event every
16 33 8 / 28 / 95 0 Days

Backup at: 16 38 8 / 28 / 95

10 Enter the date and times for the warning and the start of the first backup you wish to perform into the appropriate fields.

Times are entered in 24-hour (European or Military) format, with 00:00 equivalent to midnight and 23:00 equivalent to 11:00 PM. The Warn Nodes At fields tell NovaServer when to warn connected users that a backup is about to begin. (Backups can diminish the server's performance somewhat.) You should probably set this field to five minutes or so before the backup actually begins. The backup itself should happen at times when few users are on the server. Avoid overlapping the times of your Backup event with the times of your Maintenance event.

11 Enter 1 into the Repeat Event field and make sure that the pop-up menu next to it reads Days.

This causes the event to be performed every day at the time you specified. You can also specify a backup at other intervals if you prefer.

12 Close the New Event window.

NovaServer asks if you would like to save the new event.

13 Click Yes to save the new event.

14 Close the List Events window.

To temporarily disable automatic backups, deactivate the Enable Backup Events checkbox in the Auto-Backup panel of the Server Options window. To change the times at which your server runs a backup, double-click the Backup event record in the List Events window, edit the appropriate fields in the Edit Event window, then close the Edit Event window and answer Yes when NovaServer asks if you want to save the event.

If you want to back up the server to tape, you have two options. First, you can have the server back itself up as specified above, then use Dantz Retrospect™ Remote or similar software to back up this copy to tape, while the server is running. Alternately, you can choose to shut down the server to make the backup. This, too, can be automated if your backup software supports scheduled backups. You can schedule NovaServer to quit just before the backup (scheduled by the backup software) begins, then let the backup software restart the server when the backup has been completed. (You can create a Quit event by following steps 7-14 above, choosing Quit from the Event Type pop-up menu instead of Backup.)

Virus checking. Your NovaServer is actually fairly safe from viruses. Even if a user uploads an infected program, the virus cannot actually put your server at risk until the file containing the virus is unpacked and the program executed. Since your Macintosh can't run IBM PC software, your NovaServer is not susceptible to any of the widespread PC viruses. There are considerably fewer Macintosh viruses than there are PC viruses, giving you an immediate virus protection advantage.

For maximum protection from viruses and other destructive software, never unpack and run untested programs on the server itself. Always download or copy software to another computer before testing it. Avoid letting other computers on your local area network access the server's hard drive using System 7 File Sharing (in particular, make sure File Sharing is turned off when you are testing downloaded software on another machine). Use software like the freeware program Disinfectant or the commercial products Symantec's SAM™ or DataWatch's Virex™ to check your server every week or so.

Hard Drive Checkup. Use a program such as Norton Disk Doctor™ (a part of Symantec's Norton Utilities™) to periodically check your server for damaged directories and other file system corruption. (Apple's Disk First Aid is also useful; however, it does not check everything that Norton Disk Doctor checks. Use both programs, as they check for somewhat different things.) You must quit the server to perform these checks; in fact, it is recommended that you start the machine from a floppy disk before running either Norton Disk Doctor or Disk First Aid.

NovaServer has been designed to avoid corrupting the data stored on a hard drive, even if the server's power goes out unexpectedly, so if Norton Disk Doctor finds errors on a regular basis, you may have a problem with your hard drive's driver software or even a hardware problem with your computer's SCSI interface, SCSI termination, or the hard drive itself.

Desktop Rebuilding. Every Macintosh drive has a Desktop database where files' icons and other attributes are stored. Since NovaServer is constantly creating and deleting files, rebuilding the Desktop database can improve performance. To rebuild the Desktop database, press the ⌘ and Option keys when the Welcome To Macintosh screen disappears, and continue holding them down until the Finder asks you if you would like to rebuild the Desktop on your drives. We suggest doing this approximately once every week. Another useful program for rebuilding the Desktop is TechTool, a freeware program available on NovaCentral.

Optimizing and Defragmenting. NovaServer is designed to store message forum messages, file library descriptions, scripts, and other frequently changed information in single files. It is possible that these files could become fragmented, so using an optimizer like Speed Disk™ (a part of Symantec's Norton Utilities™) every couple of weeks can in many cases improve the server's performance noticeably. Unfortunately, you must quit the NovaServer application before you can run Speed Disk, so we suggest warning your users well in advance when you plan to optimize the drive. We also recommend that you always make a full backup of your server's hard drive before optimizing—just in case. For performance reasons, we do not suggest background optimizers like AlSoft's DiskExpress II.™

SECURING YOUR SERVER

Anyone with physical access to your server has complete access to the information stored on the server. For this reason, you might want to prevent unauthorized users from making changes to the server—particularly if you run NovaServer in a school environment (children seem to love changing preferences settings to mess things up).

Your first line of defense is the Lock Setup menu item on the Setup menu. When you choose Lock Setup, you are asked to enter your chosen setup password twice for verification. Do not forget your password. After locking the Setup menu, you (and everyone else) cannot use any items on the Setup menu other than Unlock Setup (which, of course, requires the password you entered earlier). Locking NovaServer's Setup menu does not affect windows that are already open. If you leave, for instance, the Account Records window open, you can still edit user account records even though the Setup menu is locked. You can use this feature to allow your on-site staff to add or edit accounts while protecting your menu structure and other server options from change.

While locking the Setup menu deters casual tampering by well-intentioned people, someone who wants to wreak serious havoc on your server can simply quit the NovaServer application and drag the whole NovaServer folder to the Trash using the Finder. There are software solutions available to combat this kind of interference, but a better solution is to physically secure the server in a locked room or closet (making sure there is adequate ventilation in the latter case). Some Macintosh models have lockable power switches that allow you to disable the server's keyboard and mouse with a key; this is also effective.

KEEPING YOUR SERVER UP

You can allow NovaServer to recover gracefully from power failures and most crashes by keeping an alias of the NovaServer application in the Startup Items folder and making sure the Macintosh running the server is configured to restart after the restoration of power. Some Macintosh models do not allow this; for example, many Mac II family computers must be powered up from the keyboard after power has been lost. However, other models have some way to force the machine to turn right back on: the IIci, IICx, and IIsi let you turn the power button (on the back of the machine) a quarter-turn; the Quadra 950 lets you lock the power on with the key switch; and the latest Energy Star-compliant Macs let you force the machine to power-up after a power outage with the Auto Power On/Off control panel. (This control panel may not be installed on your machine by default, but it can be installed from a System 7.5 disk set or CD-ROM.) Set up your Macintosh with an alias to the NovaServer application in the Startup Items folder so that NovaServer starts running when power is restored.

An uninterruptible power supply (UPS) can, of course, help keep your server from even noticing short power outages. We like the BackUPS™ series, manufactured by American Power Conversion (APC).

Occasionally your server may experience a hardware or software glitch that causes it to lock up or crash. Make sure the Restart System On Crash checkbox, in the General panel of the Server Options window, is activated. This causes the server to restart itself after many types of system errors. If you put an alias of the NovaServer application in the Startup Items folder, the NovaServer application is automatically launched after the Macintosh restarts.

We have programmed NovaServer carefully, so software glitches that can't be handled by the auto-restart feature should be rare, but if they do happen, your server could be down for a while before anyone notices it. Some particularly serious system operators carry a pager to alert them when their server crashes. Using almost any computer, modem, and scriptable terminal software, you can write a script that automatically tries to dial the server periodically, and if it is unable to make contact, calls the pager number.

Once you've found out your server is down, how do you get it back up again without having to go and restart it? The Mac Power On/Off +Aux, by Server Technology, is a device that allows you to restart your server remotely over a phone line, even sending a power-on keypress for machines that need it. Simply connect the device behind one of your modems; if the server goes down, the modem doesn't answer, and the call rings through to the Mac Power On/Off. Allow the call to ring several times and the server is powered down, then restarted.

Alternately, if your machines can be configured to restart automatically after a power outage, the BSR X-10™ system of house control modules includes a telephone responder that can be used to turn off, then turn on, up to eight separate machines. Any Radio Shack can special-order the BSR-compatible Plug 'N' Power™ Telephone Responder, along with the Appliance Modules you need (one for each server).

REMOTE MAINTENANCE

- *In this chapter, you'll learn how to perform maintenance tasks when you're away from your NovaServer.*

REMOTE MAINTENANCE BASICS

NovaServer has a text-based user interface that allows you to perform the following system administration functions remotely:

- Verify new users
- Edit a user's account record, including changing their access level or password
- Add users to and remove users from groups
- Edit your server's scripts, access levels, options, and parameters
- Read any user's electronic mail
- Manage the outbound network message queue
- Read and clear the server's log files
- Read, upload, download, and delete files on the server
- Edit your server's menus
- Edit forums and libraries and the files they contain

Text mode logons. To use these functions, you must log on to NovaServer using a text-based terminal program with a supported emulation (TTY/VT100/ANSI), *not NovaTerm*. You may also perform these functions directly at the keyboard of your NovaServer by logging on in a terminal window for a local node. All of the instructions in this section assume you have already logged onto the server in text mode using a privileged account (such as the Sysop account).

To log on in text mode on a local node:

- 1 **Choose the number of a node with a Node Type of Local from the Windows menu.**

If you aren't sure which node or nodes are local, open the Server Status window (choose Status from the Setup menu). The last column of the status list, labeled Connect, is the node type. (If you don't see any local nodes, create one, following the instructions in Chapter 3, "Basic Server Operations.")

- 2 **Choose Logon Local from the Terminal window.**

NovaServer prompts you for your Account ID and Password.

- 3 **Enter the Account ID, then the password, of an account with system operator privileges (such as Sysop).**

You are now logged on locally to the server. Your server's Welcome information appears, eventually followed by the Main Menu.

The Tree server component. Several of the remote system administration functions require access to a Tree component. We suggest setting up a System Administration menu (which you grant only you and your assistants or moderators access to) containing message forums for discussing the operation of the system, file libraries for system operator use only, and a Tree component. Give this folder high enough access level requirements to ensure that only trusted individuals can see it. For more information on adding such a menu to your server, including the Tree component, see Chapter 4, "Creating Your Server's Menu Structure."

Remember that to leave a Tree component, you use the MO, Move Out, command. Do not use the T, Turn Tree Into Menu, command.

VERIFYING NEW USERS

To verify newly created user account records:

- 1 **Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu, shown on the next page, appears.

Remote Operation Commands (See manual for complete list of commands)

```
=====
EU...Edit User                F....Force Hangup
ESS...Edit Server Sites      ESO...Edit Server Outgoing Mail
ESE...Edit Server Nodes      ESV...Edit Server Verify Users
ESA...Edit Server Access Levels  ESP...Edit Server Parameters
ESF...Edit Server Flags (Options) ESZ...Edit Server Zone List
MO...Move Out of Tree        T.....Turn Tree into a Menu
=====
```

Command:

2 Type **ESV** and press **Return**.

The words **Edit Server Verify** users appear on the screen as you type **ESV**. After you press **Return**, the first unverified account record appears, as shown below.

```
Edit User Account #5                A) Handle:Mark Wong
=====
B) First:Mark                        C) Last:Wong
D) Address:935 Vista del Sol
+) Country:
-) City:Los Angeles                 F) State:CA
G) ZIP Code:90056                   H) Phone:714/555-8150
I) Acc. Password:*****            L) Max time per day:0 mins.
M) AppleTalk mail notification?No  N) Download limit:0k
O) Access Level:100 : 100 : 100 : 100

P) Total uploaded:0k                Q) Total downloaded:0k
R) Uploads:0                        S) Downloads:0
T) Computer type:                   U) First call:4:09:53 PM 8/28/95
V) Total calls:0                    W) Last call:4:09:53 PM 8/28/95
X) Mail Sent:0                      Y) Public Posts:0
Z) Time used on last call date:0m   #) Guest account?No

1) Delete this user  2) User DB File  3) Verify user
E) Exit (or press return)
*) Redraw the display

(A thru Z, 1, 2, 3, +, =, *, #)?:
```

3 Edit the user's access level and time limits as desired by choosing the appropriate options from the menu and entering new values.

4 Press **3** to mark the user's account as verified, then press **Return**.

The next unverified user account, if any, is displayed. Otherwise, the Remote Operations menu re-appears.

5 If there are additional new accounts to be verified, return to step 3. Otherwise, type **MO** to move out of the Tree component.

EDITING USER ACCOUNTS

- This instructions in this section affect user account records, which are accessed locally through the Account Records window (choose Accounts from the Setup menu).

To edit a user account:

- 1 **Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu appears.

- 2 **Type EU.**

The words Edit User appear on the screen as you type EU.

- 3 **Enter the user's full or partial handle or screen name, or their account number, and press Return.**

If only one user matches the account ID you typed, their account record appears, and you may skip ahead to step 5. Otherwise a list of all matching users appears.

- 4 **Type EU again, then enter the full account ID of the desired account and press Return.**

The user's account record, below, appears.

```
Edit User Account #5
=====
B) First:Mark
D) Address:935 Vista del Sol
+) Country:
=) City:Los Angeles
G) ZIP Code:90056
I) Acc. Password:*****
M) AppleTalk mail notification?No
O) Access Level:100 : 100 : 100 : 100

A) Handle:Mark Wong
C) Last:Wong
F) State:CA
H) Phone:714/555-8150
L) Max time per day:0 mins.
N) Download limit:0k

P) Total uploaded:0k
R) Uploads:0
T) Computer type:
V) Total calls:0
X) Mail Sent:0
Z) Time used on last call date:0m

Q) Total downloaded:0k
S) Downloads:0
U) First call:4:09:53 PM 8/28/95
W) Last call:4:09:53 PM 8/28/95
Y) Public Posts:0
#) Guest account?No

1) Delete this user 2) User DB File 3) Un-verify user
E) Exit (or press return)
*) Redraw the display

(A thru Z, 1, 2, 3, +, =, *, #)?:
```

- 5 **Edit the user's account information as desired by choosing the appropriate options from the menu and entering new values.**

See Chapter 7, "Managing Your Accounts," for further information on the account record parameters.

- 6 Press Return to save changes to the user's record.
- 7 If there are additional accounts to be edited, return to step 3. Otherwise, type MO to move out of the Tree component.

EDITING GROUPS

- This instructions in this section affect user groups, which are accessed locally through the List Groups window (choose Groups from the Setup menu).

To edit groups:

- 1 **Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu appears.

- 2 **Type EG and press Return.**

The words Edit Groups appear on the screen as you type EG. After you press Return, the Edit Group menu, shown below, appears.

```

Edit Group
-----
C)reate group
D)elete group
A)dd a new group member
R)emove an old group member
L)ist group members
M)ake a group a mailing group

Type Return to exit
GroupEdit:
```

- 3 **Edit groups as desired by choosing options from the menu.**
 - **To create a new group**, press C and enter the name of the new group.
 - **To delete an existing group**, press D and enter the name of the group to be deleted.
 - **To add users to a group**, press A and enter the name of the group, followed by the user or group to be added. (Recall that groups may contain other groups.)
 - **To remove a user from a group**, press R and enter the name of the group, followed by the user or group to be removed.
 - **To see a list of all the users in a group**, press L and enter the name of the group.

- **To allow a group to be accessed through electronic mail** (that is, as a mailing list), press **M** and enter the name of the group. This is equivalent to activating the Allow E-Mail Access checkbox in the Editing Group window.
- 4 When you have finished making changes to groups, press Return.**
NovaServer displays the Remote Operations menu once again.
 - 5 Type MO to move out of the Tree component.**

EDITING SCRIPTS

- *This instructions in this section affect NovaServer scripts, which are accessed locally through the List Scripts window (choose Scripts from the Setup menu).*

To edit a script:

- 1 Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu appears.

- 2 Type ET; do not press Return.**

The words `Edit Text/Script` appear as you type `ET`.

- 3 Type the name of the script you wish to edit and press Return.**

If the script already exists, NovaServer starts the line editor and allows you to begin editing the script. Otherwise, NovaServer asks if you would like to create a new script.

- 4 Press Y if you want to create a new script, or N if you mistyped a script name.**

NovaServer starts the NovaServer Line Editor and allows you to enter the new script.

- 5 Edit the script using standard Line Editor commands, typing .S (the period key, followed by the letter S) and Return when done to save your changes.**

For more detailed instructions on using the NovaServer line editor, see Chapter 17, "Line Editor Reference." When you have finished editing the script, the Remote Operations menu re-appears.

- 6 Type MO to move out of the Tree component.**

EDITING ACCESS LEVELS

- *This instructions in this section affect the settings available locally in the Access Levels panel of the Server Options window (select Options from the Setup menu).*

To edit your server's access levels:

- 1 Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu appears.

- 2 Type **ESA** and press **Return**.**

The words `Edit Server Access levels` appear on the screen as you type `ESA`. After you press `Return`, the Access Levels menu, below, appears.

```
A)New user access level : 100 : 100 : 100 : 100
B)Kill access level : 900 : 900 : 900 : 900
C)Sysop utilities access level : 1000 : 1000 : 1000 : 1000
D)Vote access level : 100 : 100 : 100 : 100
E)NovaTerm 3.1 access level : 100 : 100 : 100 : 100
F)Network mail access level : 100 : 100 : 100 : 100
```

```
Type Return to exit
Type * to see display
SysAccess:
```

- 3 Choose the access level to be changed from the menu by typing a letter.**

NovaServer displays the current value of this access level, then prompts you for the new access level.

- 4 Enter the new access level numbers, separated by colons, then press **Return**.**

NovaServer re-displays the `SysAccess` prompt.

- 5 Press the asterisk (*) key to re-display your server's access level, press **Return** to exit, or go back to step 3 to change another access level.**

If you press `Return`, the Remote Operations menu re-appears.

- 6 Type **MO** to move out of the Tree component.**

EDITING SERVER OPTIONS

- This instructions in this section affect the settings available locally in the Server Options window (select Options from the Setup menu).

To edit your server's options:

- 1 **Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu appears.

- 2 **Type `ESF` and press Return.**

The words Edit Server Flags appear on the screen as you type `ESF`. After you press Return, the System Flags menu, below, appears.

- A) Editor flags
- B) Log flags
- C) Logon flags
- D) User flags
- E) General

Type Return to exit
Type * to see display
System Flags:

- 3 **Select a category from the list displayed by typing a letter, or press Return to exit to the Remote Operations menu.**

A list of available settings for the selected category appears. These lists are shown below.

Editor Flags

- A) Abort verification?Yes
- B) Cut off in editor if time expires?No

Log Flags

- A) Log-on/log-off tracking ?Yes
- B) Add posts to logs?Yes
- C) Add new users to logs?Yes
- D) Use Full action logging?Yes
- E) Sysop action logging?Yes

Logon Flags

- A) Print total # of calls?Yes
- B) Print the # of calls today?Yes
- C) Print last callers name?Yes
- D) Print last call time?Yes
- E) Print time of this call?Yes
- F) Print # of calls by the user?Yes
- G) Print user's posts/uploads/downloads/mail?Yes
- H) Print Max K Download?No

User Flags

- A) Auto-delete expired accounts?Yes
- B) Private Server (no new accounts) ?No
- C) Default Web access: Full Access.

General

- A) Print time left at command line?Yes
- B) Auto delete files that have been killed?Yes
- C) Make new uploads in file libraries public immediately?Yes
- D) Enforce Download Limits?No
- E) Downloads in mail are subtracted from max download?No
- F) Uploads in mail are subtracted from max download?No
- G) E-Mail disabled?No

4 Select a setting to be changed by typing a letter.

NovaServer prompts you for the new value of the selected setting.

5 Enter the new value and press Return.

The menu prompt re-appears.

6 Type an asterisk (*) to review the settings on this menu, press Return to go back to the System Flags menu, or go back to Step 4 to change another setting.

7 When you have changed any settings you wish to change, press Return to exit to the System Flags menu, then press Return again to exit to the Remote Operations menu.

The Remote Operations menu re-appears.

8 Type MO to move out of the Tree.

EDITING SERVER PARAMETERS

- *This instructions in this section affect the settings available locally in the Server Options window (select Options from the Setup menu).*

To edit your server's parameters:

1 Navigate to the menu containing the Tree component and select the Tree component from the menu.

The Remote Operations menu appears.

2 Type **ESP** and press Return.

The words `Edit Server Parameters` appear on the screen as you type `ESF`. After you press Return, the System Parameters menu, shown on the next page, appears.

A)# calls:88
B)New user time per day:30
C)Last call time:4:08:12 PM 8/28/95
D)Calls today:0
E)Last caller:Sysop
F>Password echo:*****
G)Chat bell rings:3
H)Server's phone number:7143799004
I)Logon time:5 min
J)New user signup time:15 min
K)Maximum number of users:400
M)Mail Folder::NS Files:Mail Attachments:
N)Upload Credit Ratio:0
O)Post Credit:0
P)Starting download limit:0

Type Return to exit
Type * to see display
SysParam:

3 Select a setting to be changed from the list displayed by typing a letter.

NovaServer prompts you for the new value of the selected setting.

4 Enter the new value and press Return.

The menu prompt re-appears.

5 Type an asterisk (*) to review the settings on this menu, press Return to go back to the Remote Operations menu, or go back to Step 3 to change another setting.

If you press Return, the Remote Operations menu re-appears.

6 Type MO to move out of the Tree component.

READING A USER'S MAIL

- *Reading a user's electronic mail using the instructions below marks messages as read, which might tip off the alert user that someone has been reading his mail.*

To read another user's electronic mail:

I Navigate to the menu containing the Tree component and select the Tree component from the menu.

The Remote Operations menu appears.

2 Type RA.

The words Read Account mail appear on the screen as you type RA.

3 Enter the user's full or partial handle or screen name, or their account number, and press Return.

If only one user matches the account ID you typed, their mailbox appears. Otherwise a list of all matching users appears.

4 Type RA again, then enter the full account ID of the desired account and press Return.

The user's mailbox appears. (An example mailbox is shown below.)

```

#      From                               Subject
-----
N 1) Sysop                               New user information
N 2) Dan Jones                            Hey man, glad to see you!
N 3) Robert Mason                         Information you requested
```

to read, L)ist, D)etele, E)xit, R)eply, F)orward, N)ewscan:

5 Read a letter in the user's mailbox by typing its number, followed by Return.

NovaServer displays the letter, then re-displays the mail prompt.

6 Go back to step 5 to read another letter, or press Return to go back to the Remote Operations menu.

7 Type MO to move out of the Tree component.

MANAGING OUTGOING MESSAGES

To view or edit the outgoing message queue:

1 Navigate to the menu containing the Tree component and select the Tree component from the menu.

The Remote Operations menu appears.

2 Type ESO.

The words Edit Server Outgoing messages appear on the screen as you type ESO. When you press Return, the list of all messages waiting to be sent to other network sites appears. (A sample outgoing message list appears on the next page.)

Items in the queue:

#	What
N 1)	Sysop
N 2)	Mark Wong
N 3)	John Smith

Sysop/Infoport
Lisa Wong/WongWay
rich@foo.bar.com

- 3 Type the number of a message and press Return to read that message; or type D, the number of a message, and Return to delete a message from the queue.**

Deleting a message from the queue keeps it from being sent to other sites.

- 4 If you wish to view or delete other messages, return to step 4. Otherwise, type E to go back to the Remote Operations menu.**
- 5 Type MO to move out of the Tree component.**

VIEWING AND CLEARING SERVER LOGS

To view or clear the error log, InfoLink log, server log, or usage log:

- 1 Navigate to the menu containing the Tree component and select the Tree component from the menu.**

The Remote Operations menu appears.

- 2 Type RL.**

The words Read Log appears on the screen as you type RL. When you press Return, the Read Log menu, below, appears.

1)	InfoLink
2)	Usage
3)	Server
4)	Error

Your Choice:

- 3 Select the type of log you wish to read by typing a number.**

NovaServer displays the specified log, then ask you if you would like to clear the log, view it again, or exit.

- 4 If you want to clear the log, type **C**. If you would like to review the log again, press **A**. Otherwise, press **E** to go back to the Remote Operations menu.

If you press **A**, NovaServer re-displays the log and asks you again what you want to do with it. Type **C** to clear the log or **E** to go back to the Remote Operations menu.

If you press **C** or **E**, the Remote Operations menu appears again.

- 5 Type **MO** to move out of the Tree component.

WORKING WITH FILES ON THE SERVER

NovaServer allows you to manage files stored on the server's hard drive with the following commands. These commands can be extremely dangerous and could potentially cause data loss or corruption if you delete or edit a file you shouldn't, so use them with care.

- **RF (Read File)**. Displays a file on the terminal
- **KF (Kill File)**. Deletes a file from the server's hard drive
- **EF (Edit File)**. Edits a text file using NovaServer's line editor
- **U (Upload file)**. Upload a file from the remote computer to NovaServer
- **D (Download file)**. Download a file from NovaServer

Each of these commands requires the *pathname* of the file to be operated upon. The pathname describes the path the computer must follow to find the specified file, starting with the name of the volume the file is on and listing each folder in the order it would be encountered. The volume and folder names are separated by colons (:). For example, a file named File on a hard drive named Main, in a folder called Work Files, has a pathname of `Main:Work Files:File`.

If the file is in the same folder as the NovaServer application (or in a folder inside the NovaServer application folder), you can take a shortcut. Starting the pathname with a colon (:) tells NovaServer to start the path in the NovaServer application folder. This allows you to access server files without regard for the name of the hard drive the server is stored on or what folder the server application may be in. To refer to a file called CheckVersion, in the Templates folder inside the NS Files folder in the NovaServer applications folder, you could use the pathname :NS Files:Templates:CheckVersion.

EDITING MENUS

- *The instructions in this section affect your server's menu structure, which is edited locally using the NovaServer menu editor (choose Menus from the Setup menu).*

To edit your server's menu structure remotely, navigate to the menu you wish to edit and press the @ key. NovaServer displays the remote menu editor, below.

```
Menu Editor
=====
N...Name of menu:Main Menu
A...Auto-generate script:ON
S...Edit Menu Script
C...Choices
M...Menu (exits this editor)
E...Exit menu and this editor

T...Turn Menu into Tree

Edit Menu Selection(T, C, D, M, E)?:
```

From this menu, you may perform the following actions:

- **Change the menu's name** by pressing N and entering the new name.
- **Toggle the menu's Auto Menu Script checkbox** by pressing A. For more information on menu scripts, see Chapter 5, "NovaScript and Custom Menu Design."
- **Edit the menu's script** by pressing S. NovaServer places you into the line editor and allows you to edit the script. See Chapter 17, "Line Editor Reference," for more information on the line editor.
- **Exit the editor** by pressing M or E. Pressing M exits the menu editor and displays the menu you were editing; pressing E exits the menu editor and also exits the menu you were editing.

- **Turn the menu into a tree** by pressing T. The tree is an alternate method of accessing your server's contents. If you inadvertently turn a menu into a tree, press T at the remote operations menu to fix it.
- **Add, delete, or edit menu choices** by pressing C. NovaServer displays the choices editor, shown below.

```
[M] Mail Room: Menu
[L] File Libraries: Menu
[F] Forums: Menu
[U] Online Utilities: Menu
[C] Conferencing and Chats: Menu
[S] Send Feedback to Sysop: Send Feedback
[=] Client Software: File library
[D] Disconnect: Logoff
[T] Sysop Menus: Menu
[?] Help: Get URL
-----
L...List      A...Add      R...Remove   P...Press Return  M...Menu
X...X-Mark   #...Access   K...Key change N...Name change  E...Exit
```

The choices editor displays all the components on the menu (including their key equivalent, type of component, and name), along with a short list of options at the bottom. Choices which do not have a key equivalent are listed as [None-A], [None-B], [None-C], and so on.

From this menu, you may perform the following actions:

- **Re-display the choices** on your menu by pressing L.
- **Add a menu component** by pressing A. NovaServer prompts you for the key equivalent, name, and type of component to be added, then ask you for any other information that component type needs.
- **Edit a menu choice's required access level** by pressing #. NovaServer displays the component's current access level, then prompts you for the new setting.
- **Remove a menu component** by pressing R, followed by the key equivalent of the item to be removed. (If the item does not have a key equivalent, press @ followed by the None-x letter.)
- **Change a menu component's key equivalent** by pressing K, followed by the key equivalent of the item to be changed. (If the item does not have a key equivalent, press @ followed by the None-x letter.) NovaServer prompts you for the new key equivalent.
- **Change the name of a menu component** by pressing N, followed by the key equivalent of the item to be changed. (If the item does not have a key equivalent, press @ followed by the None-x letter.) NovaServer prompts you for the new name.
- **Preview the menu** by pressing M.
- **Exit the choices editor** by pressing E.

EDITING FORUMS AND LIBRARIES

NovaServer allows you to edit the settings of message forums and file libraries remotely. Navigate to the desired forum or library and press *. (In a library, press * twice.) One of the following menus will appear.

- **Message Forum**

- A) Maximum number of days until expiration:0
- B) Directory Name::NS Files:Forum Attachments:
- C) InfoLink Master:None

InfoLink distribution:None

- D) Add site
- E) Remove site
- F) Allow Network Posts?Yes
- G) Use Real Names?No
- M) All posts anonymous?No
- N) Notify online users when there are posts?No
- P) Purge old messages
- S) Forum moderator:None

- **File Library**

- A) Library Name: Macintosh Files
- B) Library Folder: :NS Files:Macintosh Files:
- C) Renumber Library
- E) Audit Downloads?No
- F) Audit Uploads?No
- G) Read-only Library?No
- H) Download Access level: 0 : 0 : 0 : 0
- I) Transfer Files
- K) Free downloads?No
- L) Call/Post Ratio: 0
- M) Upload Access Level: 0 : 0 : 0 : 0
- N) Enforce Download Limit?Yes
- O) Self-maintaining Library?Yes
- P) InfoLink Master:None

InfoLink distribution:

- Q) Add site
- R) Remove site
- T) Maximum size of all files:No limit
- U) Personal library:No

These settings mirror the settings available in the settings windows for message forums and file libraries, discussed in Chapter 8, "Creating Your Server's Menu Structure."

You may also edit the files in a library by pressing * followed by a file number. NovaServer displays the following menu:

- A) Name: StuffIt Expander™
- B) Uploader: Sysop
- C) Short Desc: StuffIt Expander from Aladdin Systems
- D) Full Description
- E) This file is public.
- F) Filename: :NS Files:Macintosh Files:StuffIt Expander™

RUNNING A VIRTUAL SERVER

- In this chapter, you'll learn how to set up and manage a Virtual Server.

VIRTUAL SERVER BASICS

As we mentioned near the beginning of this manual, NovaServer lets you create a group of servers on a local area network that behave, from the user's end, like a single server. You can have each server be an exact duplicate of the others (using InfoLink to keep the contents of your message forums and file libraries synchronized, as explained in Chapter 11, "Networking with InfoLink"), or you can store different resources on different machines (for example, message forums on one machine, file libraries on another, and electronic mail on a third). Since all resources are available from any machine, users can connect to any machine in your Virtual Server and see the whole server.

There's one exception to Virtual Server resource sharing. In the current release of NovaServer, users can participate in conferences and chats only with other users on the physical machine they are connected to. A future release of NovaServer may add support for multi-server conferences and chats.

The heart of a Virtual Server is the *account server*, a computer on your local area network running an ODBC-compliant SQL database server (such as Butler™). In a Virtual Server, your user account records are stored on the account server, rather than on each individual NovaServer. Each NovaServer then uses the account server to validate users when they log on, allowing them to log on from any machine in the Virtual Server. Additionally, user-specific information (such as the date each message forum or file library was visited) is written back to the account server so that the information about what messages and files are new to that particular user are also available to all the machines in your Virtual Server.

For convenience, you may also store your server log files on your account server. Storing your log files centrally, on the account server, allows you to easily generate usage and billing reports for your entire server, without having to retrieve the log files from each individual machine in the Virtual Server. (NovaServer does not include a billing system; however, we expect third-party billing systems to become available for Butler and other ODBC databases soon.)

A minimal Virtual Server consists of an account server and one NovaServer. You might choose this option to improve performance on a single server with a large number of accounts, or to provide more flexible billing and user accounting. (A high-powered multi-user database like Butler is inherently more flexible than NovaServer's built-in account database.)

Even though a Virtual Server behaves like one server from the user's point of view, you cannot simply make multiple copies of the NovaServer software. Each must be individually licensed and have its own NS Key file.

SETTING UP THE ACCOUNT SERVER

NovaServer can use any ODBC-compliant SQL database server as an account server. (ODBC stands for Open Data Base Connectivity, a standard developed by Microsoft that allows applications to access a database over a network without regard for the type of database being used. SQL stands for Structured Query Language, a plain-English method of specifying database queries.)

Butler,TM from EveryWare Development Corp., is an ODBC-compliant SQL database server that runs on the Macintosh. ResNova is an authorized Butler reseller, and you can purchase this software directly from us. If you already have an ODBC server for the Macintosh, Windows, or Unix, you can use it instead; however, we provide specific setup instructions only for Butler. These setup instructions, along with an empty Butler account database template, can be found on NovaCentral, the ResNova support server.

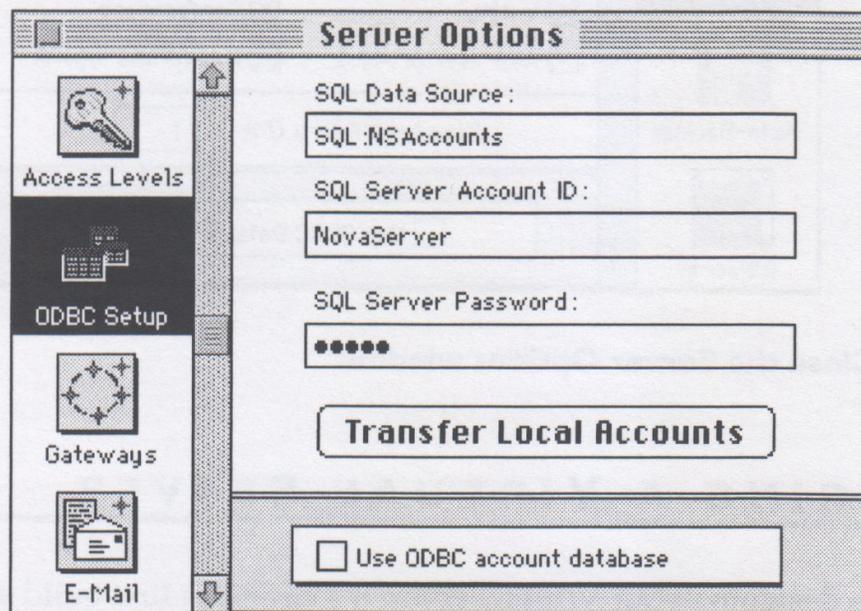
SETTING UP NOVASERVER TO USE THE ACCOUNT SERVER

Once you have set up your account server, you must configure each of the NovaServers in your Virtual Server to connect to the account server instead of using their own built-in account databases.

To configure NovaServer to use an external account database:

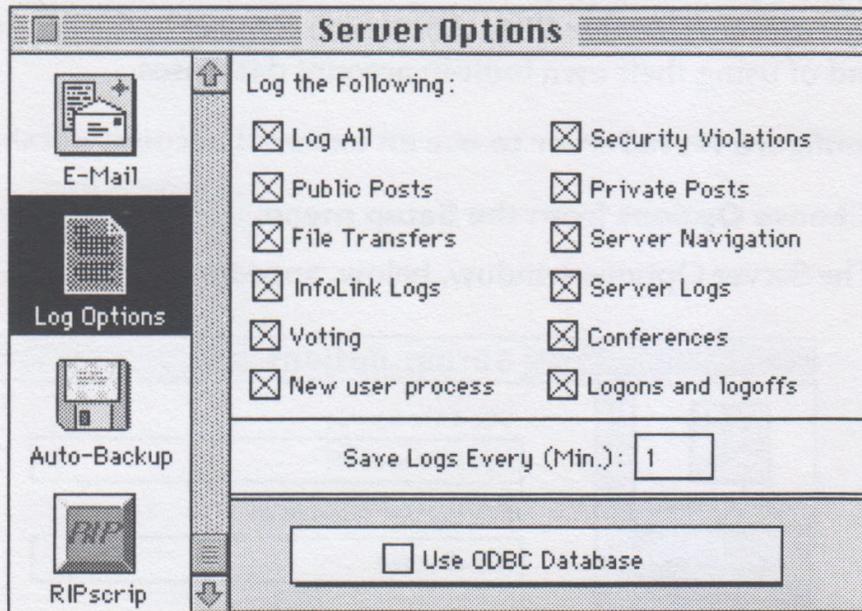
1 Choose Options from the Setup menu.

The Server Options window, below, appears.



- 2 If the ODBC Setup panel is not highlighted, as shown above, find the ODBC Setup icon in the scrolling list on the left side of the window and click it.**
- 3 Enter the SQL data source, account ID, and password for accessing the accounts database on the account server, as determined in the section above.**
- 4 Activate the Use ODBC Account Database checkbox at the bottom of the window.**
- 5 Click Transfer Local Accounts to move the accounts in NovaServer's account database to the external account server.**

- 6 If you would like to also store system log files in the external database, click the Log Options icon, then activate the Use ODBC Database checkbox at the bottom of the Log Options panel (shown below).



- 7 Close the Server Options window.

DESIGNING A VIRTUAL SERVER

When designing your Virtual Server, it's easiest to first build a single NovaServer containing all the resources you wish users to have access to. When you have verified that this server works the way you want it to, you can copy the NovaServer application folder to the other machines in your Virtual Server (replacing the NS Key file for each machine) then modify that design, if necessary.

The easiest-to-create type of Virtual Server simply duplicates the server resources on all machines, using InfoLink networking (see Chapter 11, "Networking with InfoLink") to keep the information on each individual machine synchronized. In other words, when a user posts a new message to a message forum on one server, InfoLink automatically copies the message to the other servers. In this case, one machine should be chosen as the Supervisor site for all the other machines in the Virtual Server, and you should request key files for your servers from ResNova that reflect this hierarchy. (Each NS Key file has the server's Supervisor site's InfoLink address embedded.)

One advantage of this simple Virtual Server is redundancy. Since you are running two or more NovaServers with essentially the same information, you are protected from hardware failure. If one server goes down, you can still allow callers access to the other servers. When you need to make a full backup or perform maintenance, you can often take down one server with little or no inconvenience to callers.

More sophisticated Virtual Server setups use URLs, Uniform Resource Locators, to reduce redundancy and improve performance by spreading out your server's resources over several machines. Recall that NovaServer uses standard World Wide Web protocols internally; one of these protocols is HTTP, the HyperText Transfer Protocol. NovaServers on the same local area network can use HTTP to talk to each other and retrieve resources from other servers. (For security reasons, servers must be in the same AppleTalk network zone to communicate this way.)

In such a Virtual Server, one machine might store file libraries, another might store message forums, a third might store electronic mail, and a fourth might serve HTML pages. Each of these servers might have a number of callers using them, or you might simply dedicate a server to provide resources for other servers. The latter arrangement is somewhat like the network a large Internet provider might have, with NNTP (Usenet news), SMTP (electronic mail), FTP (file transfer), and HTTP (World Wide Web) servers separate from the machine users actually log on to.

MESSAGE FORUMS AND FILE LIBRARIES

Since importing network messages to message forums, in particular, can have a serious impact on a server's performance, moving the message forums to another machine can reduce the perceived slowdown of your system when it's importing messages, since only the message forum server slows down—not everything else. If you are just starting to build a Virtual Server and don't know where to begin, moving your message forums to a separate machine is a great starting point. Moving particularly active file libraries to another machine is a good second step.

To create such a Virtual Server, we suggest, again, starting with a server that contains all the resources you want to provide. Then copy this server to your other machines and begin modifying it to request resources from the appropriate servers, replacing message forums and file libraries with Get URL server components that open the appropriate URLs from other servers. The URL formats you can use are shown on the next page.

<u>Component Type</u>	<u>URL for access from another server</u>
-----------------------	---

Message Forum	<code>http://*/news/forumname</code>
File Library	<code>http://*/library/libraryname</code>

Replace the asterisk shown in the URL with the address of the desired server. (The asterisk means to get the resource from the caller's server, regardless of its address.) You may use the server's Internet domain name, if it has one, or its IP address (such as 198.11.63.200). For example, to open the message forum called General from a server called forums, use `http://forums.myserver.com/news/General`.

Each Get URL component allows you to choose a plain document icon, a message forum icon, or a file library icon as its appearance in NovaView, the Finder-like user interface provided by NovaTerm, so you can hide from your users the fact that the server they're using is actually requesting the desired resource from another server.

Remember that you can also access server components using hotlinks in HTML documents and with the `requestURL` statement in NovaScript scripts. You should therefore check all your HTML documents and NovaScript scripts to ensure that any URL-based references to message forums or file libraries refer to the proper server.

HTML DOCUMENTS & TEXT FILES

It can be frustrating to maintain a set of HTML and text documents if you are forced to copy a document to all your other NovaServers every time you change it. You can designate one of the machines in your Virtual Server network as the central repository for your HTML documents and text files. This, too is accomplished by replacing the Display File components on your other servers with Get URL components that refer to the server that contains the documents. The URL for displaying text and HTML documents takes the form:

```
http://*/file/filename
```

Replace the asterisk shown in the URL above with the address of the desired server. (The asterisk means to get the resource from the caller's server, regardless of its address.) You may use the server's Internet domain name, if it has one, or its IP address (such as 198.11.63.200). For example, to display the file `Main.html` from a server called `www`, use the URL `http://www.myserver.com/file/Main.html`.

You should be especially careful to make sure that *all* URLs throughout your system that refer to text or HTML documents are properly revised to refer to the server containing your master HTML documents. This includes URLs embedded in NovaScripts and hotlinks in HTML documents as well as Get URL server components.

ELECTRONIC MAIL AND THE HOME SERVER

Each user on your server has an electronic mailbox. But in a Virtual Server, with two or more NovaServers, which machine stores the user's electronic mail?

The answer is that each user's electronic mail is stored on that user's *home server*—the server from which the account was created. When you create an account using the Account Records window, or when a user signs up for a new account, the account server remembers which NovaServer was used to create the account. Then, when the user asks to see the contents of his or her mailbox, the NovaServer they are using at the moment consults the account server to find out which machine their mailbox is on, then gets their mail from that server.

If you allow your callers to create their own user account records, and your incoming telephone lines are set up to distribute incoming calls randomly to your servers, your users' mailboxes will be distributed fairly evenly across the machines that make up your virtual server. Should you prefer to have a single machine designated as an electronic mail server, simply enter the address of that server in the Mail Server field of the E-Mail panel in the Server Options window (choose Options from the Setup menu) of each server. You may use the machine's Internet domain name, if it has one, or its IP address (such as 198.11.63.200). All mailboxes for users logged onto that machine are then retrieved from the specified server.

SHARING OTHER RESOURCES

So far we've discussed how to set up message forums, file libraries, text and HTML documents, and electronic mailboxes across your Virtual Server. However, every part of the NovaServer software uses URLs internally. This means you may access *any* resource from any server in your Virtual Server with the Get URL component, if only by its reference number. Here are the URL formats you can use:

<code>http://*/library/libraryname</code>	opens file library
<code>http://*/news/forumname</code>	opens message forum
<code>http://*/mail/*</code>	opens caller's mailbox
<code>http://*/file/filename</code>	opens document inside HTML Files
<code>http://*/external/externalname</code>	runs HTML external
<code>http://*/design/refnumber</code>	opens a design element by reference number
<code>interact://*/external/extname</code>	opens I/O window and runs text external
<code>interact://*/script/scriptname</code>	opens I/O window and runs script

To find out a server component's design reference number, watch the NovaTerm History window as you access the desired element. The full URL, in the `http://*/design/#` format, is displayed and may be copied to the clipboard. The Main Menu's reference number is always 17; other elements' reference numbers are assigned at random as you build your server's menu structure.

For more information on HTML and URLs as supported by NovaServer, see Chapter 16, "HTML Reference."

NovaScript scripts. Your server's NovaScript scripts are a particularly good resource to consider sharing if you change them frequently. As with HTML and text documents, keeping all your scripts in one place can save you time and headaches if you have more than a couple of servers.

Stand-alone scripts (scripts accessed from the List Scripts window—choose Scripts from the Setup menu) can be replaced with `requestURL` commands that call the script from the master server. For example, your `NewUserSurvey` script can be replaced with the single line:

- `requestURL "interact://main.myserver.com/script/NewUserSurvey"`

This way, when you update your `NewUserSurvey` script on your main server, all your other servers automatically use it.

Similarly, your menu scripts can be replaced with `requestURL` statements that call the menu script from the master server by reference number. (You must use the reference number of the menu on the master server, *not* the reference number of the menu on the server that is calling the script.) Your Main Menu script, for example, could be replaced with:

- `requestURL "http://main.myserver.com/design/17"`

TEXT AND RIP CALLERS

NovaServer's virtual server technology works only with the NovaTerm client software. Callers using text-mode terminals (TTY/VT100/ANSI) or RIP cannot make HTTP requests or use URLs, so they are limited to the resources stored on the server they call. This means that the server they call must be their account's home server—since mailboxes are accessed with URLs, and URLs work only with NovaTerm, the user's mailbox must be on the server they are calling.

If you want your callers to use only the NovaTerm client software, this restriction is irrelevant. After all, America Online[®] doesn't allow text-mode callers, and they're nonetheless the largest service in the country.

If, however, you do want to support all types of callers with your Virtual Server, we suggest setting up a dedicated machine, with all your server's resources available, specifically for text-mode and RIP callers. This machine should also be the home server for your accounts so that all callers' electronic mailboxes are stored there. Text-mode and RIP callers should be instructed to connect to this machine (using a separate phone number or IP address), while NovaTerm callers can call the other machines in your Virtual Server network. These other machines can access the resources stored on the dedicated machine, or, alternately, the dedicated machine can be networked, with InfoLink, to *mirror servers* that serve message forums, file libraries, and other resources to the other servers your NovaTerm callers connect to.

If you expect a large number of text-mode and/or RIP callers, you can set up two or more servers on your network to handle them, using InfoLink to keep them identical. The system operator should assign each text-mode or RIP caller a home server (by creating their account on that server) and instruct the caller to connect only to that server.

The first step is to check the physical connections. Make sure the power cables are properly connected to the power supply and the system unit. Also, check the network cables and ensure they are plugged into the correct ports. If the system still does not power on, you may need to check the power supply unit (PSU) and the motherboard. It is also possible that the system BIOS is not configured correctly. You may need to enter the BIOS setup and check the power settings. If you are still having trouble, you may want to consult the system manual or contact technical support.

TEST AND RIP CALLERS

When you are testing the system, it is important to use the correct tools and techniques. For example, you should use a multimeter to check the voltage levels of the power supply. You should also use a network analyzer to check the network traffic. If you are using a network analyzer, you should make sure you are capturing the traffic on the correct interface. You should also make sure you are capturing the traffic for the correct duration. If you are using a network analyzer, you should also make sure you are capturing the traffic for the correct duration. You should also make sure you are capturing the traffic for the correct duration.

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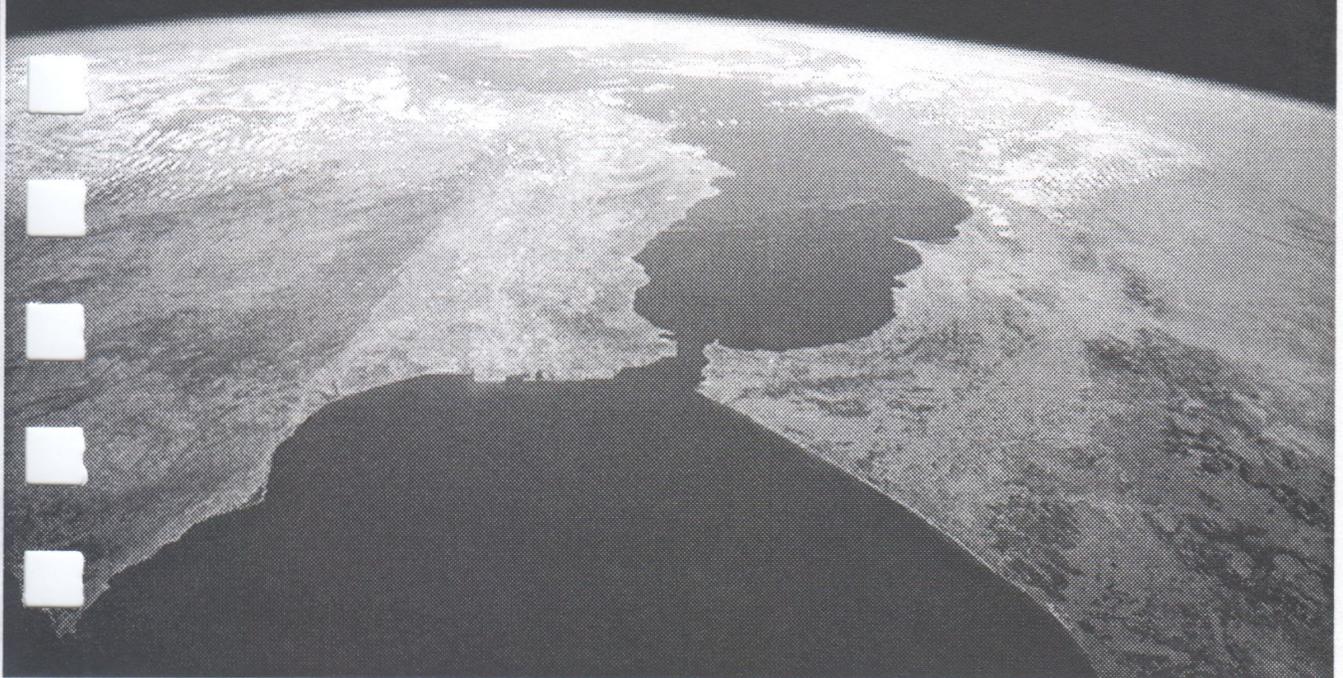
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NETWORKING

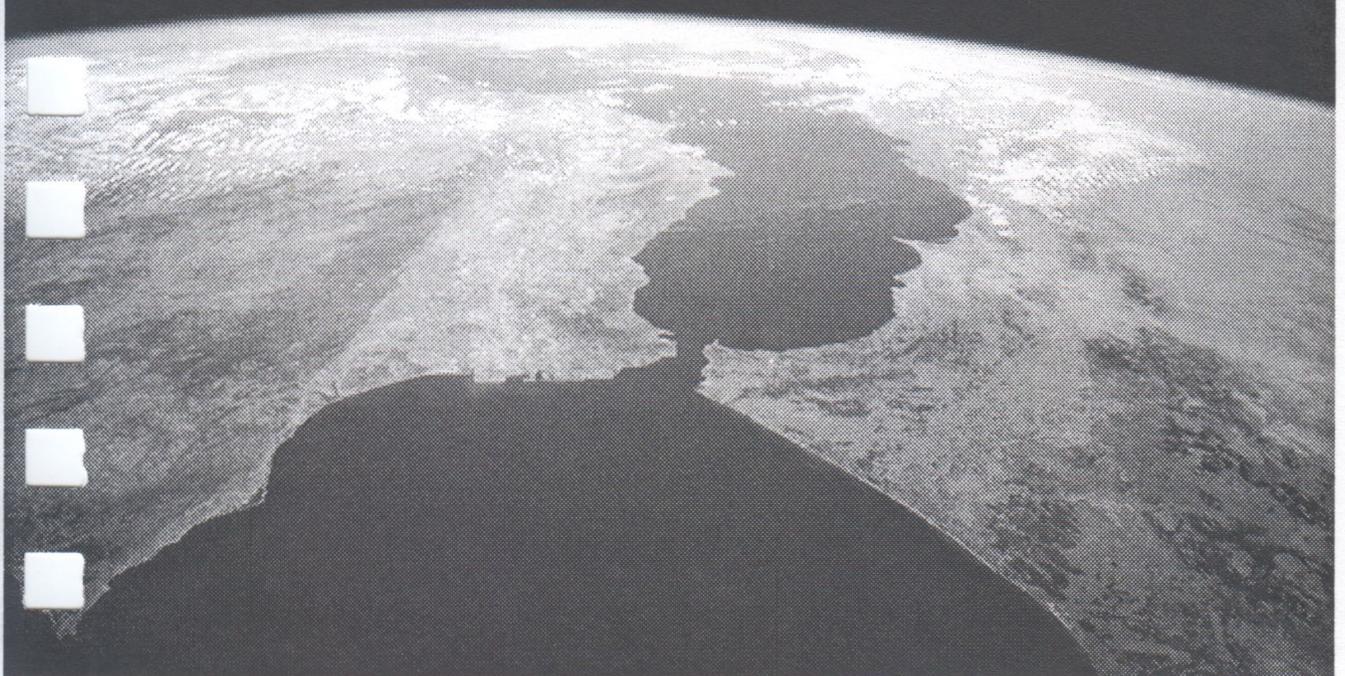


NETWORKING

This section includes chapters designed to help you set up and manage connections between NovaServer and other servers, including Internet-based servers. These chapters include:

Chapter 11	Networking With InfoLink™	185
Chapter 12	Networking With the Internet	207
Chapter 13	Networking With Other Gateways.....	241

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Chapter 11	Networking With InfoLink™	185
Chapter 12	Networking With the Internet	207
Chapter 13	Networking With Other Gateways.....	241

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NETWORKING WITH INFOLINK

- *In this chapter, you'll learn how to exchange mail, files, and messages with other NovaServers using the InfoLink gateway.*

INFOLINK™ BASICS

InfoLink™ is an extremely flexible store-and-forward protocol that allows NovaServers to exchange messages, files, and mail with each other. InfoLink can be used with several servers all continuously connected to a local area network, a Wide Area Network, or with geographically-separated servers connected by occasional modem hookups. In either case, InfoLink allows the users of different servers to share electronic mail, message forums, and file libraries.

The sites that connect each other form an InfoLink network. Each site has a three-part InfoLink address, consisting of a network number, a subnet number, and a node number. Sites can connect through InfoLink regardless of any physical network connections (or lack thereof) between the machines, and InfoLink addresses are similarly independent of network addresses. It is the exchange of messages that creates an InfoLink network, not the physical wiring.

For message forums and file libraries, InfoLink designates one site as the *master site* for the forum or library. When a new message is posted to a forum, or a new file is uploaded to a library, that message is routed to that area's master site, where it is redistributed to all the other sites that have asked to receive that forum or library.

Each network site has a *supervisor*—a site above it in the InfoLink network hierarchy. (The supervisor site is not necessarily the site *immediately* above the server, which, due to the way InfoLink addressing works, need not actually exist.) Your supervisor is the one site that your server must connect to on a regular basis, because it knows all the other sites on your level and can route messages to them for you. (You can also connect to other sites besides your supervisor—InfoLink can deliver messages directly to any sites you connect to.)

ResNova sponsors a network of NovaServers called NovaWorld; every NovaServer operator is invited to join this network, and if you do, your supervisor will likely be a local or regional hub in NovaWorld. There are other networks similar to NovaWorld you may also join. Or you might not choose to join NovaWorld, or any other established network of NovaServers, choosing instead to network your server using Internet protocols, or to start your own network of servers, or simply to operate your server completely isolated from any network.

NovaServer also supports Internet networking protocols, including SMTP, NNTP, Telnet, and HTTP (World Wide Web). (A third-party gateway for UUCP is also available.) The next chapter covers these Internet networking methods, but you should read this chapter first for background.

The process of networking your server includes several steps:

- Set up InfoLink Network Sites
- Set up Message Forums and File Libraries
- Set up Network Events for your InfoLink Sites
- Set message import priority

The sections below explain how to perform these functions and to bring your NovaServer into contact with others of its kind.

SETTING UP INFOLINK SITES

Before you can share anything with another NovaServer, you must first tell NovaServer about the other servers you want to connect to. NovaServer refers to these other servers as *network sites*.

The first time you start your server, no sites are defined. You must define at least one site, your supervisor, to begin InfoLinking. (If you don't already know who your supervisor is, first check on NovaCentral, the ResNova support server, to find other system operators in your area who could serve as your supervisor. Then contact us to get a new key file that contains your InfoLink address and the address of your supervisor.)

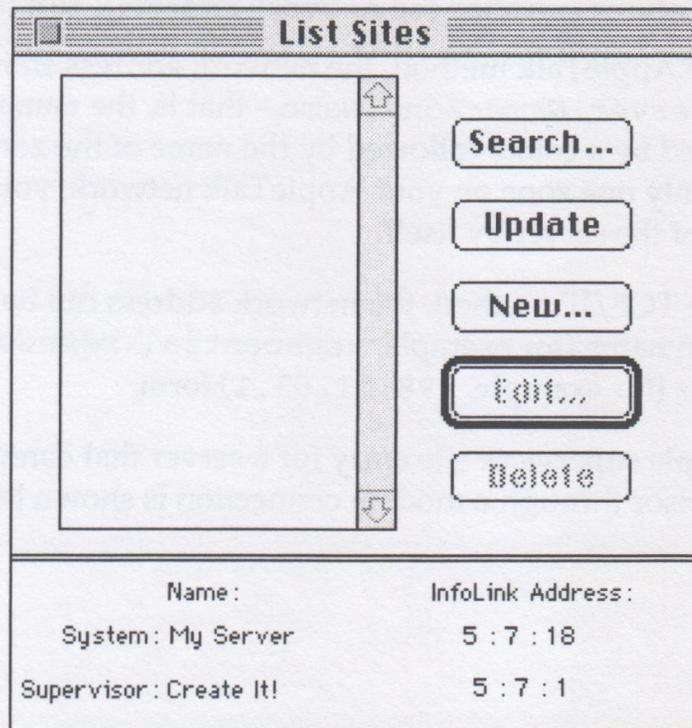
If you join NovaWorld, or some other network of NovaServers, your supervisor may be a site in your local calling area; in other cases, it might be a site in another state or another country, or it might be the very hub of NovaWorld. In other cases, your supervisor site might be ResNova's central server, or your server may be the hub of a new network, in which case you may not have a supervisor at all. If you are linking a number of servers on a local area network, you may set up one of your servers to be the supervisor for the others.

You need to know the exact server name of your supervisor, along with a way of contacting the server (either over a modem, or through your LAN or the Internet).

To set up your supervisor site:

I Select Network Sites from the Setup menu.

The List Sites window (below) appears. Make a note of your supervisor's InfoLink address, indicated at the bottom of this window.



For more details about the other options available in this window, see "The List Sites Window," later in this chapter.

2 Click New.

The New Site window (below) appears.

3 Choose InfoLink from the Gateway Type pop-up menu.

4 Select the connection method from the Connection Type pop-up menu.

Available connection types include Modem, AppleTalk, Comm Toolbox, and TCP/IP.

- Use **Modem** when your supervisor is not on your local area network or the Internet. NovaServer uses one of its serial nodes to connect to this server.
- Use **AppleTalk** when your supervisor site is on your local area network.
- Use **TCP/IP** when your supervisor site is on your local area network, Wide Area Network, or the Internet.
- Use **Comm Toolbox** when your supervisor site is reachable only by a special connection method for which you have a Communications Toolbox extension.

5 Fill in the required information, including your Supervisor's site name, phone number (or network address), and InfoLink address.

For the AppleTalk method, the network address should be in the form `Server Name:Zone Name`—that is, the name of the server, followed by a colon, followed by the name of the zone it is in. If you have only one zone on your AppleTalk network, you can use the name of the server by itself.

For the TCP/IP method, the network address can be in either domain name (for example, `novacentral.resnova.com`) or IP address (for example, `198.11.63.1`) form.

A sample supervisor site entry for a server that connects to its supervisor through a modem connection is shown below.

New Site

Gateway Type: InfoLink
 Connection Type: Modem
 Name: Supervisor
 Phone Number: 1-810-555-8705
 Modem Init: ATZ
 InfoLink Address: 5 : 7 : 1

Lock Site
 Share Site
 Allow Connections
 Return Invalid Mail

Request Update
Send Update

For more information on the other options available in this window, see "Editing Network Sites," later in this chapter.

- 6 Close the New Site window by clicking its close box or by pressing ⌘W.**

An alert appears asking if you want to save the changes to the site.

- 7 Click Yes or press Return to save the changes.**

If you plan to InfoLink with other servers, enter their information now by repeating steps 2-7. You must create a Network Site for each server you connect with, regardless of who initiates the connection. NovaServer refuses connections from sites not defined in the site list.

THE LIST SITES WINDOW

The List Sites window, shown below, is displayed when you choose Network Sites from NovaServer's Setup menu.

List Sites

- Infoport
- Internet
- NNTP
- NovaCentral
- Supervisor

Search...
Update
New...
Edit...
Delete

Name:	InfoLink Address:
System: Jerrysplace	100 : 999 : 18
Supervisor: Supervisor	1 : 1 : 1

From this window you can perform the following functions:

- **Search for a particular network site** by clicking Search and entering part or all of the name of the site. The first site on the list whose name contains the characters you entered is selected.
- **Request a site list update** from your supervisor by clicking Update. This action replaces your entire site list, so you are asked to confirm the action. If your server is not continuously connected to its Supervisor, the request is stored until you connect, at which time it is sent. Your Supervisor will send back an updated site list during a later InfoLink connection, usually within 24 hours, telling your server about all the sites your supervisor knows.
- **Create a new site** by clicking New. The New Site window, discussed below, appears.
- **Edit an existing site** by clicking the site's name in the list, then clicking Edit. (You may also edit an existing site by simply double-clicking it.) The Edit Site window, discussed below, appears.
- **Delete an existing site** by clicking the site's name in the list, then clicking Delete. Since this action is permanent, you are asked to confirm it.

EDITING A NETWORK SITE

When you create a new Network Site, or edit an existing one, NovaServer displays the Network Site window, below. You tell NovaServer everything it needs to know about the other server in this window.

New Site		
Gateway Type: InfoLink	Connection Type: Modem	<input type="checkbox"/> Lock Site
Name: Untitled	Phone Number: 1-714-379-9013	<input checked="" type="checkbox"/> Share Site
Modem Init: ATZ	InfoLink Address: 0 : 0 : 0	<input checked="" type="checkbox"/> Allow Connections
		<input checked="" type="checkbox"/> Return Invalid Mail
		Request Update
		Send Update

Gateway Type. The Gateway Type pop-up menu tells NovaServer what type of site this is. Available types include:

- **InfoLink.** The site is another NovaServer. This chapter focuses on this *type of gateway*.
- **QuickMail.** The site is a QuickMail™ server. (QuickMail, a cross-platform electronic mail package, is published by CE Software. It is not included with NovaServer. We discuss this gateway in Chapter 13.)
- **SMTP.** The site is an Internet mail (Simple Mail Transfer Protocol) server. This type of gateway is discussed in Chapter 12.
- **NNTP.** The site is a Usenet news (Network News Transfer Protocol) server. This type of gateway is discussed in Chapter 12.
- **File.** The site does not use any of the above protocols. NovaServer writes messages destined for the site into a file in the NS Network Mail folder. The file is named with the name of the site and the word *Export*, and holds outgoing messages separated by null (ASCII 0) characters. You may later move this file to the site in the most convenient manner and have it processed there. To move messages from the site to NovaServer, place a file that does not include the word *Export* in its name in the NS Network Mail folder. (NovaServer does not require that import files have any particular name, but you may find it easier to keep track of these files if you give them the same name as the site they come from.)
- **Other.** Additional gateways may appear in this pop-up menu if you have installed them in your server's NS Externals folder. We discuss third-party gateways in Chapter 13.

Connection Type. The Connection Type pop-up menu tells NovaServer how to connect to the server. Available types include:

- **Modem.** The server is reached by dialing a modem. NovaServer uses a modem connected to one of its serial nodes to dial a phone number and connect to the site.
- **AppleTalk.** The server is on the same local area network as the server and understands AppleTalk protocols. (Usually this means that the server is another Macintosh, but this may not always be the case.)
- **Comm Toolbox.** The server uses a connection method other than the ones defined in this menu, but for which you have a Macintosh Communications Toolbox tool.

- **TCP/IP.** The server uses the TCP/IP protocols. TCP/IP (short for Transmission Control Protocol and Internet Protocol) is the official protocol of the Internet, so every Internet host understands TCP/IP. However, systems connected to your local area network may also understand TCP/IP, if they have the proper software installed, even if they aren't on the Internet. To use a TCP/IP connection, you must have MacTCP correctly installed and configured on your server.
- **Local.** The server is running on the same machine as NovaServer.

Name. The name of the site. When the site is another NovaServer, use the name that the other server knows itself by. (Every NovaServer has a unique name, which is embedded in its key file and displayed at the bottom of the List Sites window.) When creating an SMTP site, the usual name is `Internet`. When creating an NNTP site, the usual name is `NNTP`.

Network Address, Phone Number, or File Name. The exact name of this field varies depending on the connection type you select. Its purpose is to define any connection-specific information necessary for connecting to the site.

- **For the AppleTalk method,** the network address should be in the form `Server Name:Zone Name`—that is, the name of the server, followed by a colon, followed by the name of the zone it is in. If you have only one zone on your AppleTalk network, you can use the name of the server by itself.
- **For the TCP/IP method,** the network address can be in either domain name (for example, `novacentral.resnova.com`) or IP address (for example, `198.11.63.1`) form.

Modem Init. This field appears only when you have selected the Modem connection type. Here, you may define a custom initialization string to be sent to the modem before the phone number you specified is dialed. In most cases, the default (`ATZ`) is adequate; however, if you have special needs that are not addressed by your modem's power-up configuration, you may change the string as needed.

InfoLink Address. This field appears only when you have selected the InfoLink gateway type. Here you enter the three numeric components of the site's InfoLink address. InfoLink addresses for each server are assigned by ResNova and embedded in the server's key file.

Connect when E-mail is sent. This checkbox appears only when you have selected the SMTP gateway type. If this checkbox is activated, the gateway automatically connects to the site whenever there is mail waiting to be sent. If this checkbox is deactivated, a network event must be invoked to cause a connection to the site.

Lock Site. This checkbox, if activated, prevents other sites from sending updates that change this site's information. Usually, a network hub or subnet hub has the Lock Site checkbox activated, while other sites will not. This allows the hub to send updates to all servers but prevents other sites from inadvertently changing server parameters across an entire network.

Share Site. This checkbox, if activated, allows other sites in the InfoLink hierarchy to know about the site. Uncheck this for sites such as Internet (for SMTP mail gateways) and NNTP (for Usenet news gateways), as well as any other gateways you do not want other sites to know about.

Allow Connections. This checkbox, if activated, allows connections to be made between your server and the site being edited. If this checkbox is not activated, your NovaServer never attempts to contact the other site (even if a Network Event is active for the site), and if it attempts to contact you, the connection is rejected.

Return Invalid Mail. This checkbox determines how NovaServer handles mis-addressed electronic mail. On networks like InfoLink and the Internet, it is considered polite to have the server automatically send an error message to users when they send mail to an invalid account. On other networks, such as FidoNet, this may be considered a waste of bandwidth (that is, a waste of long-distance phone time, and therefore money). If this checkbox is deactivated, error messages are sent to the Postmaster or Sysop account, instead of to the original sender.

Request Update. This button asks your supervisor to send you new information for this site. If your server is not continuously connected to its supervisor, the request is stored until you connect, at which time it is sent. Your supervisor will send back an updated site entry during a later InfoLink connection, usually within 24 hours. If the site is locked when the update arrives (see "Lock Site," above), the new information is discarded.

Send Update. This button sends updated information for this site to all the InfoLink sites your server knows about. Please use this button only on private networks, not on NovaWorld.

ELECTRONIC MAIL WITH INFOLINK

Users of your server can send electronic mail to any server in your Network Sites list by appending a slash, followed by the name of the site, to the account name of the user. For example, to send mail to a user named Dave Rhodes on a server named Pyramid, you would use the address `Dave Rhodes/Pyramid`. The address at which users of your server can be reached from other NovaServers in your InfoLink network is constructed in the same manner from their account ID and your server's name.

You can also send electronic mail to Internet sites through InfoLink, even if your site doesn't have an Internet SMTP connection. Your supervisor can allow you to use its SMTP mail gateway to send and receive Internet mail. Since this may increase the network traffic through your supervisor's SMTP gateway, you should check with the system operator of this site before activating this feature.

To allow users to send Internet mail through another site:

1 Select Network Sites from the Setup menu.

The List Sites window appears.

2 Click New.

The New Site window appears.

3 Choose InfoLink from the Gateway Type pop-up menu.

You may leave the Connection Type pop-up menu set at Modem, since your server never actually connects to this site.

4 Enter a site name of Internet and an InfoLink address of 99:99:99.

You may leave the Phone Number field blank. You never actually connect to this site; it exists solely to force your server to send Internet mail messages to your supervisor's real Internet site, which will route the messages to the Internet.

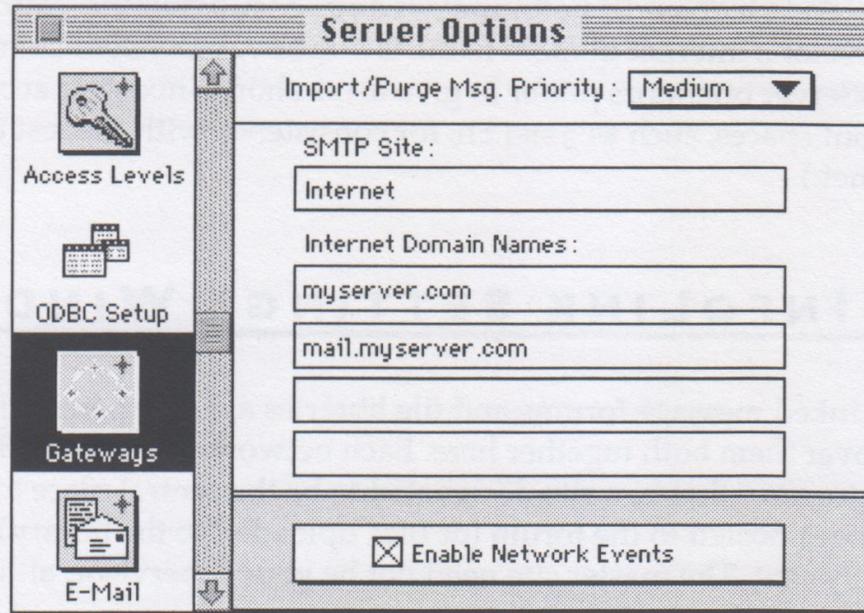
5 Close the New Site window by clicking its close box or by pressing ⌘W.

An alert appears asking you if you want to save the changes you made to the site.

6 Click Yes or press Return to save the changes.

7 Choose Options from the Setup menu.

The Server Options window appears, as shown below.



8 If the Gateways panel is not open, as shown above, find the Gateways icon in the scrolling list at the left side of the Server Options window and click it to display the Gateways panel.

9 Enter Internet into the SMTP Site field.

10 Close the Server Options window.

When your Internet site has been properly configured, users can simply enter any Internet address (such as `sales@resnova.com`) and NovaServer, upon noticing the @ symbol in the electronic mail address, automatically sends the mail to your supervisor, where it is later sent through your supervisor's SMTP gateway.

Similarly, Internet mail addressed to a user at your server is automatically sorted and delivered to the proper mailbox on your NovaServer. Users at your site will be addressed from the Internet through your supervisor's Internet domain name, since you don't have one. The @ symbol will be preceded by an InfoLink-style address (a user account name, a slash, and an InfoLink site name) to tell your supervisor where to send the mail once it arrives.

Spaces in account names must be replaced with periods or underscores when addressing electronic mail to NovaServer users from the Internet. For example, John Smith's Internet mail address on your server might be `John_Smith/YourSite@supervisor.com`, assuming your supervisor's Internet domain name is `supervisor.com`. (Some NovaServer operators prefer to give users short Unix-style account IDs without spaces, such as `jsmith`, for consistency with the rest of the Internet.)

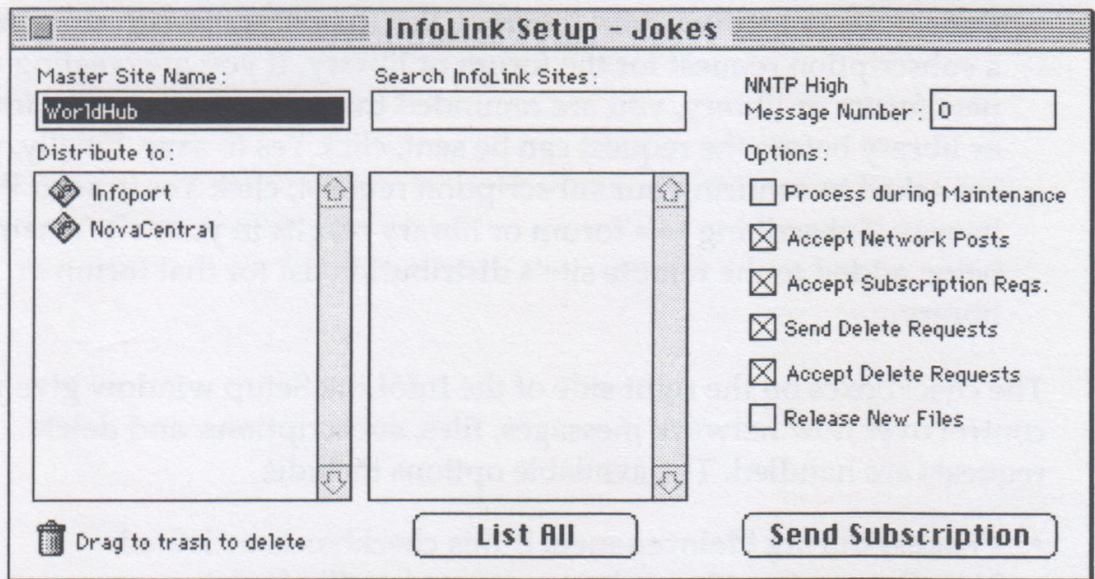
THE INFOLINK SETTINGS WINDOW

InfoLinked message forums and file libraries are set up very similarly, so we cover them both together here. Each networked forum or library has a *master site*—that is, a site designated to be the central place to which all messages posted to the forum (or files uploaded to the library) are initially sent. The master site need not be your supervisor, although sometimes it is.

Each forum or library on your server also has a *distribution list*—a list of other sites that your server distributes the forum or library to. When your server receives a new forum message or library file, it is automatically sent to all the other sites in the forum's or library's distribution list. You don't need to be the master site for a forum or library to distribute the forum or library to another site. Similarly, the site you receive a forum or library from need not be the master site—it can be any site that carries the forum or library you want. It should, however, be a site you connect to regularly.

An InfoLink feature called *subscription requests* helps ease the burden of managing your distribution lists. When your site receives a subscription request from another site, the remote site is automatically added to the appropriate distribution list, without manual intervention from you.

Both message forum and file library components have, in their options window, a Network button. Clicking the Network button opens the InfoLink Setup window. The InfoLink Setup window for a message forum is shown below. (The InfoLink Setup window for file libraries lacks the NNTP High Message Number field but is otherwise identical.)



In the InfoLink Setup window, you can perform the following functions:

- **Designate a master site.** Enter the name of the forum or library's master site in the Master Site Name field. If your site is the master site for the forum or library, enter your own server's name (as displayed at the bottom of the List Sites window—choose Network Sites from the Setup menu). You can enter the site name with the keyboard, or drag it from the Search InfoLink Sites list.
- **Find an InfoLink site.** Enter part or all of the name of an InfoLink site in the Search InfoLink Sites field, then pause for a few seconds. All sites whose names contain the text that you entered appear in the scrolling list below the field. You may now drag a site name to the Distribute To list, or to the Master Site Name field. Click List All to list all InfoLink sites.
- **Add a site to the distribution list.** To add a site to the distribution list for this forum or library, drag the site's name from the Search InfoLink Sites list (the rightmost list) to the Distribute To list (the leftmost list). Adding a site to your distribution list achieves the same result as the site's operator sending a subscription request for that forum or library.
- **Remove a site from the distribution list.** To remove a site from the distribution list for this forum or library, drag the site's name from the Distribute To list (the leftmost list) to the small Trash icon at the bottom of the window (not the Finder's Trash).

- **Subscribe to a networked forum.** Click the Subscribe button to send a subscription request for the forum or library. If you are creating a new forum or library, you are reminded that you must save the forum or library before the request can be sent; click Yes to save. Finally, you are asked to confirm your subscription request; click Yes to send it on its way. Subscribing to a forum or library results in your site's name being added to the remote site's distribution list for that forum or library.

The checkboxes on the right side of the InfoLink Setup window give you control over how network messages, files, subscriptions, and delete requests are handled. The available options include:

- **Process during Maintenance.** If this checkbox is activated, NovaServer stores incoming messages in a file for later processing. Normally, NovaServer processes incoming forum messages and library files in the background as they are received. The processing of large numbers of incoming messages and files can decrease the performance of your server, so NovaServer allows you to defer the processing of certain forums and libraries until a Maintenance Event occurs. (See Chapter 8, "Maintaining and Managing Your Server," for information on setting up a Maintenance Event.)
- **Accept Network Posts/Uploads.** You should activate this checkbox if you want to accept messages from other sites—in other words, almost always. If the master site for a forum or library does not have this checkbox activated, no messages or files are distributed to other sites.
- **Accept Subscription Requests.** If this checkbox is activated, any site that connects to you can request that they be added to the forum's or library's distribution list by clicking the Subscribe button. Should you wish to have more control over which sites receive message forums, deactivate this checkbox.
- **Send Delete Requests.** When a user or a system operator deletes a message from a forum, or a file from a library, NovaServer generates a *delete request* message, which is, if this checkbox is activated, sent to the other network sites that carry the forum or library. This allows messages and files to be deleted across the entire network, as long as the other network sites have their Accept Delete Requests checkbox activated.

- **Accept Delete Requests.** Determines how NovaServer handles delete request messages sent by other servers. When a user or a system operator deletes a message from a forum, or a from a library, NovaServer generates a delete request message that can be sent to the other network sites that carry the forum or library. If this checkbox is activated, NovaServer honors delete requests from remote sites and deletes the specified message or file.
- **Release New Files.** If this checkbox is activated, attached files (in forums) or files in libraries received over the network are automatically released and made available to the public. Activate this checkbox only if you are receiving your InfoLink subscriptions from a reliable source that screens files according to standards similar to yours. (Files uploaded by users on your server are not made available for download, or sent to other network sites, until a system operator or moderator has released them, regardless of the setting of this checkbox.)
- **NNTP High Message Number.** This field, which appears in the InfoLink Setup window for message forums only, is used by NovaServer to keep track of the last message it has retrieved from a Usenet news (NNTP) server. It is not used for normal InfoLink connections. See Chapter 12, "Networking with the Internet," for further information on networking your server with Usenet newsgroups.

SETTING UP NETWORK EVENTS

Events are actions that NovaServer automatically performs at specified times. To network your server with other NovaServers, set up a Network Event to connect to your Supervisor (and possibly other sites) on a regular basis.

You may also want these other sites to initiate connections to your server, particularly if you are connecting to a site with a long-distance telephone call, to allow the other site to share in any expenses involved in exchanging messages. You should work out this issue with your supervisor and any other sites you wish to connect to. In most cases, your supervisor will not initiate connections to you (since your supervisor may be a hub for many other sites, sharing connection costs with all of them could be prohibitively expensive), but other sites you connect with might be willing to do so, especially if you offer to share a resource that's unique to your server.

You must connect with your Supervisor on a regular basis—at least once a day, and preferably more frequently. You may also connect directly with any other site in your Network Sites list, a tactic that can help speed delivery time and reduce network congestion. However, if you do this, you should schedule your connections to these sites to occur *before* your connection with your supervisor—and before the other server's connection with its supervisor. When your server connects to its supervisor, all outbound messages are sent to it, since your supervisor is guaranteed to know where to send them. Connecting to a network site after you have already sent all your outgoing messages to your supervisor obviously offers no advantage.

To create a Network Event:

1 Choose Events from the Setup menu.

The List Events window, below, appears.

Event Name:	Event Time/Date/Repeat:	Status:
Maintenance	Start: 12:00 AM, 9/1/95 Repeat: End: 2:00 AM, 9/1/95 1 Day	Maintenance Waiting
Backup	Start: 2:00 AM, 9/1/95 Repeat: End: 2:00 AM, 9/1/95 1 Day	Backup Waiting

Buttons: Disable, Delete, Run, **Edit...**, New...

2 Click New.

The New Event window, below, appears.

Event Type: **Network** Site Name: _____

Begin Event: Hr. 17 Min. 30 Mth. 8 / Day 28 / Year 95 Repeat event every 0 Days

Try Until: Hr. 17 Min. 35 Mth. 8 / Day 28 / Year 95 Disconnect if finished

3 Make sure that the Event Type pop-up menu is set to Network (the default).

4 Enter the name of the site you wish to connect to in the Site Name field.

5 Enter the date and time you wish your first connection to occur into the Begin Event fields.

Times are entered in 24-hour (European or Military) format, with 00:00 equivalent to midnight and 23:00 equivalent to 11:00 PM.

6 Enter the date and time you wish NovaServer to stop trying to connect to the remote site into the Try Until fields.

If NovaServer cannot connect to the remote site on the first try, it continues trying to connect until the time specified in the Try Until fields. We suggest setting these fields to 5-10 minutes later than the Begin Event fields.

7 Enter an appropriate repeat interval in the Repeat field, and choose the desired unit from the pop-up menu.

The frequency of your connections is almost entirely up to you, although, as we have mentioned, you should connect to your supervisor at least once a day to keep mail, messages, and files moving in a timely manner.

8 If you are connecting to the server over a local area network, deactivate the Disconnect If Finished checkbox, if desired.

If the Disconnect If Finished checkbox is deactivated, the two NovaServers remain connected after they have exchanged any waiting mail, messages, and files. At that point, any new mail, messages, or files on one server are sent immediately to the other server, instead of being put in a batch in anticipation of the next InfoLink connection, effectively synchronizing the two servers.

9 Close the New Event window.

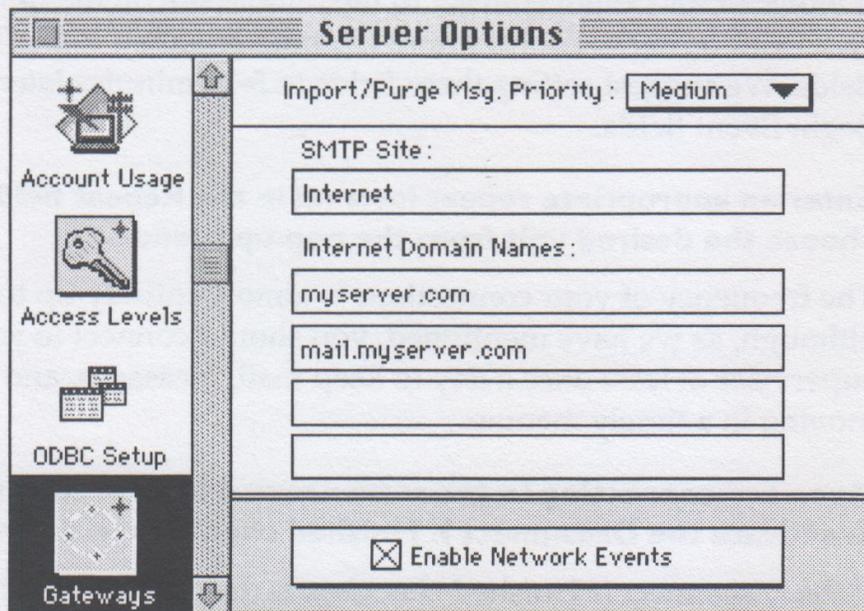
NovaServer asks you if you want to save the new event.

10 Click Yes to save the event.

To temporarily disable a particular InfoLink event, click an appropriate Network Event in the List Events window (choose Events from the Setup menu), then click Disable. You may disable all connections to a site by deactivating the Allow Connections checkbox in the site's window. You may disable *all* network events by deactivating the Enable Network Events checkbox in the Gateways panel of the Server Options window (choose Options from the Setup menu).

SETTING MESSAGE IMPORT PRIORITY

If you have *not* activated the Process During Maintenance checkbox on all of your InfoLinked message forums or file libraries, NovaServer imports new messages (moving them from a single message batch received through the InfoLink gateway into the appropriate message forums) in the background when it notices there are new messages waiting.



You can choose how much time NovaServer allocates to this task in the Gateways panel of the Server Options window (choose Options from the Setup menu, then click the Gateways icon in the scrolling list on the left side of the window). The Import/Purge Msg. Priority pop-up menu can be set to Low, Medium, or High. Low priority has very little impact on your server's responsiveness, but may take a long time to import the messages you have received. Conversely, High priority can make your server seem sluggish and unresponsive but quickly moves the messages to where they belong.

HOW INFOLINK WORKS

- *This section explains how the InfoLink protocol routes messages. You don't need to know this information to use NovaServer; it is provided for informational purposes only. (Familiarizing yourself with this information is not a bad idea, but neither is it absolutely essential.)*

InfoLink Addresses. Each NovaServer site that participates in an InfoLink network is assigned an InfoLink address, which consists of three numbers separated by colons. The first is the network number, the second is the subnet number, and the third is the node number. These numbers have no particular relation to the phone numbers or Internet addresses of the sites participating in the InfoLink network; they establish a hierarchy that is independent of the servers' physical network connections.

Servers that have an InfoLink network address in which the last two numbers are both ones (for example, 18:1:1) are considered network hubs, since they are the first site defined in the particular network. (The site 18:1:1 would be the network hub for network 18.) Network 1 is reserved for sites operated by ResNova; InfoLink address 1:1:1 belongs to WorldHub, the NovaWorld master server. WorldHub acts as the supervisor for all of the network hubs.

Servers that have an InfoLink network address in which the last number is a one (for example, 18:7:1) are considered subnet hubs. Each of these sites has as its supervisor a network hub. The supervisor for the site 18:7:1 would be 18:1:1, the network 18 hub.

It is possible that a particular branch of the network might not have network hubs or subnet hubs. In this case, the supervisor site for the sites on this network might skip a level and point directly to the network hub instead of the subnet hub.

Electronic mail routing. When electronic mail is sent from one site to another, by default, it follows the shortest network path that goes through WorldHub. This path includes the sending site, the subnet hub of the sending site (if it's not a subnet hub or network hub itself), the network hub of the sending site (if it's not a network hub itself), WorldHub, the network hub of the destination site (again, if it's not a network hub itself), the subnet hub of the destination site (if it's not a subnet hub or network hub), and finally, the destination site.

For example, an electronic mail message from site 2:18:3 to 8:2:9 would be routed through the following sites:

2:18:3--- 2:18:1--- 2:1:1 ---- 1:1:1 ---- 8:1:1 ---- 8:2:1 ---8:2:9

Sending Site	Subnet 2:18 Hub	Network 2 Hub	WorldHub	Network 8 Hub	Subnet 8:2 Hub	Destination Site
--------------	-----------------	---------------	----------	---------------	----------------	------------------

The migration pattern of outbound electronic mail, as shown by the above illustration, is upward (toward sites with more ones in their network address) when it's on a different network from its destination, and downward (toward sites with fewer ones in their network address) when it's on the same network as its destination. The amount of time a message spends at each site is determined solely by the frequency of the InfoLink events with other sites.

Short circuits. A regular connection from each server to the next higher site in the InfoLink hierarchy is the only thing that's required to make the network function. However, the InfoLink protocol also supports *short-circuiting* the path. If there was a large amount of electronic mail traffic between network 2 and network 8, the network 2 hub (2:1:1) could contact the network 8 hub (8:1:1) directly, cutting WorldHub out of the picture for messages being exchanged between networks 2 and 8. (The system operators at WorldHub would probably appreciate this a great deal, since it might remove a tremendous load from their server.) A connection with WorldHub would still be desirable to allow exchange of messages with other networks and with users on WorldHub itself, but the WorldHub network event should be scheduled *after* the connection between the two network hubs. If the WorldHub connection occurs first, any messages that might have been short-circuited are instead transmitted through WorldHub. For the same reason that connections to network hubs should be scheduled before connections to WorldHub, any connections to subnet hubs should be scheduled before connections to network hubs.

Another way of looking at this short-circuiting mechanism is to simply consider ones to be wildcards—match-anything digits. WorldHub, since it has a network address of 1:1:1, accepts electronic mail for any known NovaServer site. The network 2 hub, with an address of 2:1:1, accepts electronic mail for any known site whose address begins with a two. And the 2:18 subnet hub accepts electronic mail for any known site whose address begins with 2:18, regardless of the final digit. The site 2:18:3, which isn't a hub of any sort, accepts electronic mail only for itself.

When two sites make an InfoLink connection, they automatically know these rules and exchange the appropriate messages. Note that *all* InfoLink connections exchange messages in both directions. If your site, with an address of 2:18:3, connects to the network 8 hub, which has an address of 8:1:1, your server sends the network 8 hub all the messages it has destined for any site on network 8. At the same time, the network 8 hub sends you only messages it has destined specifically for your site (since your site is neither a subnet nor a network hub).

Message forums and file libraries. So far we've looked at how electronic mail is transmitted through InfoLink. InfoLink can also be used with message forums and file libraries. Each forum and library has a master site and a distribution list. When a new message is posted to an InfoLinked message forum, or a new file is uploaded to an InfoLinked file library, that message is first sent to the master site, following the routing scheme described above for electronic mail. (In a future version of NovaServer, moderation features will allow messages to be approved at the master site before being distributed to other sites.)

From the master site, the new message or file is sent to every site in the master site's distribution list for that forum or library. (To reduce network traffic, these sites should ideally be servers that connect to the master site on a regular basis. However, if necessary, newly posted messages can be sent from the master site to the subscribed site through a subnet or network hub, as with electronic mail.) Each of the sites that receives the forum or library from the master site may also distribute the messages or files it receives to other sites by adding these sites to its distribution list for that forum or library.

NETWORKING WITH THE INTERNET

- *In this chapter, you'll learn how to set up your NovaServer to retrieve, serve, and exchange Internet information.*

INTERNET BASICS

As we learned in the last chapter, NovaServer's built-in message and mail exchange protocol, InfoLink, lets you exchange messages with other NovaServers around the world, giving you the power to exchange messages with potentially hundreds of servers. But NovaServer also supports Internet-standard Usenet news (NNTP) and electronic mail (SMTP) protocols, along with Telnet in and out capability and World Wide Web browsing and serving. With these protocols, the universe of information available to your NovaServer expands to include the whole Internet!

Before you can share information with the Internet, you need to license the appropriate NovaServer options (Telnet, SMTP, NNTP, TCP, AppleSearch, Web Out, or Web Publish), get an Internet connection, and establish your own domain. A dial-up SLIP or PPP connection, which runs over normal telephone lines, may be adequate to start with, although you may want to investigate a dedicated high-speed line (56K or T1 speed). You need a dedicated line of some kind if you plan to offer Telnet In or World Wide Web browsing to your callers; both services rely on a continuous connection. Find a local Internet provider that offers these services, preferably one that understands the Macintosh.

Your Internet provider can help you select your domain name, which is the name by which your server is known to other users of the Internet. ResNova Software, for example, is known as `resnova.com` on the Internet.

The individual machines at your site can be given more specific names that appear before your main domain name. For example, NovaCentral, the ResNova support server, is known on the Internet as `novacentral.resnova.com`. Most Internet providers charge a modest fee (\$30-\$50) to register a domain name with the InterNIC, the organization that keeps track of domain names for the U.S., or the appropriate authority in your country. Your Internet provider should also provide Domain Name Service (DNS), the network protocol that converts domain names into computer-friendly numeric network addresses and back, for your domain.

The software you need includes MacTCP or Open Transport, and, if you're using a dial-up account, a SLIP or PPP driver (InterSLIP and MacPPP are two freely-available drivers). MacTCP is bundled as part of System 7.5; Adam Engst's *Internet Starter Kit* (available at most bookstores) is another inexpensive source for this connectivity software. Your Internet provider should know the specific settings needed to use MacTCP and either InterSLIP or MacPPP with their service (if they don't, find another provider that does). The modem you use for your Internet connection *cannot* be used as a NovaServer node.

You should read the previous chapter before reading this one. Many of the networking concepts introduced there apply here; we won't review them except as they specifically relate to networking with the Internet.

SETTING UP AN INTERNET MAIL GATEWAY

- *The features described in this section require an Internet connection and the NovaServer SMTP Option.*

Assuming your Internet connection is working, you can begin to set up your Internet mail gateway. There are several steps involved in setting up an Internet mail, or SMTP (Simple Mail Transfer Protocol), gateway:

- Tell your Internet provider what you need
- Create one or more SMTP nodes
- Create the SMTP site
- Configure the Gateways options
- Create a network event for your SMTP site, if necessary

Tell your Internet provider what you need. If your NovaServer has a dedicated Internet connection, it can function as an SMTP server in its own right. In this case, you merely need to tell your Internet provider that your NovaServer will handle all the mail for your domain. If, on the other hand, your server is connected to the Internet by a dial-up SLIP or PPP connection, your Internet provider needs to store your mail on its SMTP server, then forward it to your NovaServer when it connects. This is known as *MX forwarding*.

Create one or more SMTP nodes. An SMTP node is a special TCP/IP node with two purposes. First, it is used by NovaServer to initiate outbound connections to your Internet provider's SMTP (mail) or NNTP (news) server. Second, when your provider's mail server has mail to be delivered to your server, it initiates an SMTP connection to your server's SMTP node (if you are connected to the Internet at the time). You cannot receive Internet mail without at least one SMTP node, so the first thing you should do is create this node.

To create an SMTP node:

1 Choose Nodes from the Setup menu.

The Configure Node Settings window (below) appears.

The screenshot shows a window titled "Configure Node Settings". It contains a table with three columns: "Type:", "Port Name:", and "Idle:". Below the table are two dropdown menus labeled "Add Node Type:" and "Select:", a "Timeout in" field, and "Mins." label. At the bottom are "Delete" and "Add" buttons.

Type:	Port Name:	Idle:
1 Local terminal		5
2 Serial	Modem Port	5
3 Serial	Printer Port	5
4 TCP/IP	Telnet	5
5 TCP/IP	Telnet	5
6 TCP/IP	Telnet	5

Add Node Type: Select: Timeout in Mins.

2 Choose TCP/IP from the Add Node Type pop-up menu at the bottom of the window.

3 Choose SMTP from the Select pop-up menu.

4 Click the node before which you wish the SMTP node to appear.

For example, if you want the new SMTP node to be the first node on the list, click the existing first node. All existing nodes are shifted down the list when the new node is added. If you want the new node to appear last on the list, click the blank space after the last node.

5 Click the Add button to add the new node.

The new node is added and displayed in the Nodes window.

6 If you wish to add additional SMTP nodes, repeat steps 4-5 until all nodes have been added.

If your NovaServer is connected full-time to the Internet, we suggest that you have create four, or possibly more, SMTP nodes. (Your NovaServer SMTP license allows you to create as many SMTP nodes as you like.)

When NovaServer is acting as your sole Internet mail server, it is entirely possible for more than one Internet mail host to want to send you mail at the same time. If your server's SMTP node is busy, this could result in mail delays or possibly even rejected messages. Multiple SMTP nodes allow your server to always be available for mail delivery.

7 Close the Configure Node Settings window by clicking its close box or by pressing ⌘W.

An alert appears reminding you that you must quit and restart the server before new nodes will be available.

8 Click OK or press Return to clear the alert.

9 Choose Quit from the File menu to exit NovaServer.

NovaServer quits, and you are returned to the Finder.

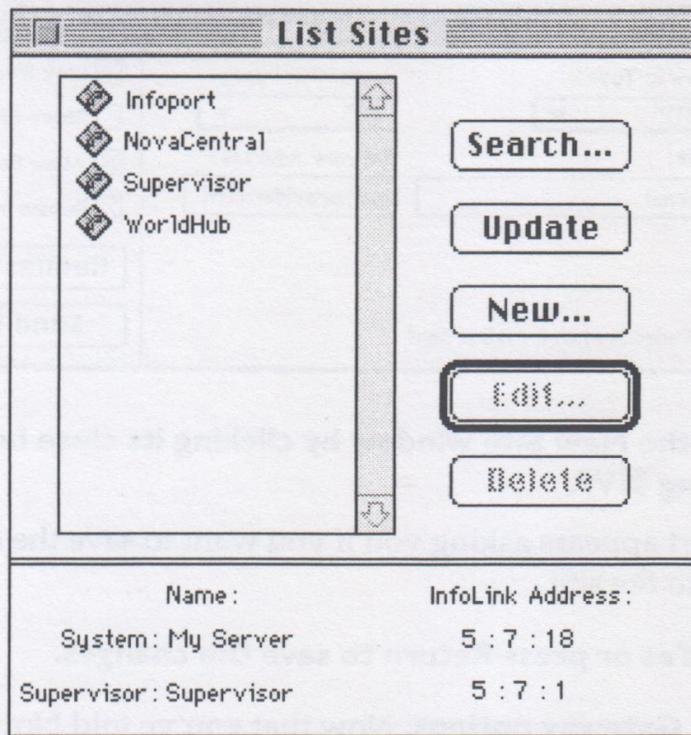
10 Re-launch NovaServer by double-clicking the NS™ 4.0 icon to install your new nodes.

Create the SMTP site. In order to route your mail through an SMTP node to the Internet, your server must know how to contact your Internet provider's SMTP server. You do this by defining an SMTP network site.

To define an SMTP network site:

1 Choose Network Sites from the Setup menu.

The List Sites window (next page) appears.



2 Click New.

The New Site window appears.

3 Choose SMTP from the Gateway Type pop-up menu.

4 Choose TCP/IP from the Connection Type pop-up menu.

It is theoretically possible to connect to an SMTP server over AppleTalk or even directly over a modem, but it would be highly irregular. Nearly all SMTP servers are accessed through TCP/IP.

5 Enter Internet into the Name field.

6 Enter the Internet address of your Internet provider's SMTP mail server in the Network Address field.

You may use either the fully qualified domain name of the server (for example, mail.provider.com) or its dotted decimal IP address (such as 204.74.76.11).

7 If your server has a full-time Internet connection, activate the Connect When E-Mail Is Sent checkbox.

If you are using a dial-up Internet connection, leave this checkbox deactivated.

A properly-configured SMTP site looks like the illustration on the next page (the Connect When E-Mail Is Sent checkbox may be deactivated).

New Site

Gateway Type: Connection Type:

Name: Network Address:

Lock Site
 Share Site
 Allow Connections
 Return Invalid Mail

Connect when E-Mail is sent

Request Update
Send Update

- 8 **Close the New Site window by clicking its close box or by pressing ⌘W.**

An alert appears asking you if you want to save the changes you made to the site.

- 9 **Click Yes or press Return to save the changes.**

Configure the Gateway options. Now that you've told NovaServer how to send Internet mail, you must configure the server's Gateway options to allow it to know which domain names to use when sending and receiving mail.

To configure your Gateway options:

- 1 **Choose Options from the Setup menu.**

The Server Options window appears, as shown below.

Server Options

Import/Purge Msg. Priority:

SMTP Site:

Internet Domain Names:

Enable Network Events

- 2 If the **Gateways** panel is not open, as shown on the previous page, find the **Gateways** icon in the list at the left side of the **Server Options** window and click it to display the **Gateways** panel.
- 3 Enter **Internet** into the **SMTP Site** field.
- 4 Enter your server's domain name(s), up to four, in the **Internet Domain Names** fields.

Each machine in your Internet domain may have its own name. For example, here at ResNova, we have machines named `novacentral.resnova.com`, `ftp.resnova.com`, and `www.resnova.com`, among others. (Your Internet provider can configure the names of your individual machines for you.) You should designate a *default server* for your domain with your Internet provider. In our case, the default server for the `resnova.com` domain is NovaCentral, our support server. This means that when an Internet user asks to connect to `resnova.com`, they are connected to `novacentral.resnova.com` automatically.

Since we want NovaCentral to receive electronic mail from the Internet whether it is sent to `user@resnova.com` or `user@novacentral.resnova.com`, we entered both domain names into our Internet Domain Names field. Your server, similarly, can accept mail for up to four separate domain names. (With mail forwarding, the domains can even have wildly different names.)

Mail sent to the Internet is always given the first domain name in the list. For example, we put `resnova.com` first on the list; when users of NovaCentral send electronic mail to the Internet, their return address appears as `user@resnova.com`.

- 5 **Close the Server Options window.**

Create a Network event for your SMTP site, if necessary. If your server is connected to the Internet full-time, you're finished. NovaServer automatically connects to the Internet whenever outbound electronic mail needs to be sent (as designated by the **Connect When E-Mail Is Sent** checkbox in the Internet network site), and incoming Internet mail is automatically accepted by NovaServer.

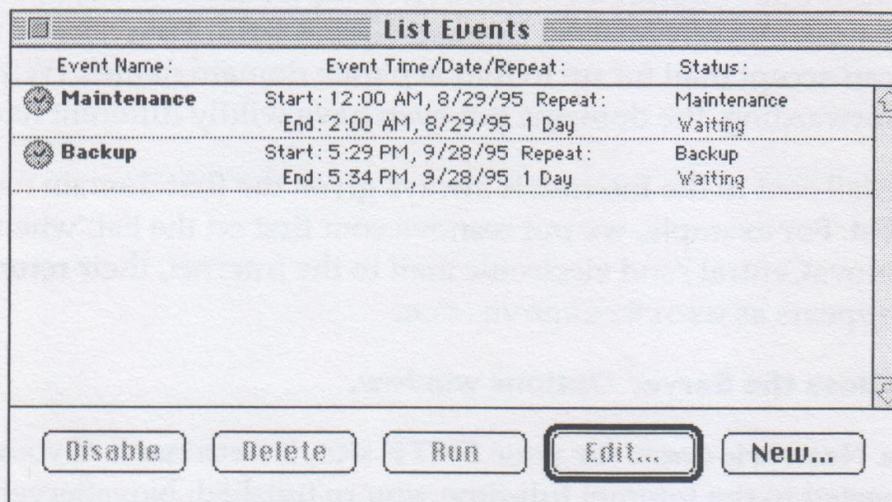
If your server is connected to the Internet only occasionally, however, you should create a Network Event to connect you to your Internet provider for mail exchange on a regular basis. When the Network Event activates, your server asks MacTCP to open a connection; MacTCP then asks your SLIP or PPP extension to dial the modem and make the connection. The result: your server automatically dial your Internet provider when necessary. Once the connection has been made, NovaServer sends any pending outgoing messages and picks up any new inbound messages.

Ask your Internet provider to set up an idle timer for your SLIP or PPP connection that automatically disconnects you after a set period of inactivity, or use the idle timer built into MacPPP or your modem, to ensure that your server does not remain connected to your Internet provider longer than it needs to be. Tying up your provider's resources by remaining connected longer than necessary is considered unfriendly.

To create a Network Event for your SMTP site:

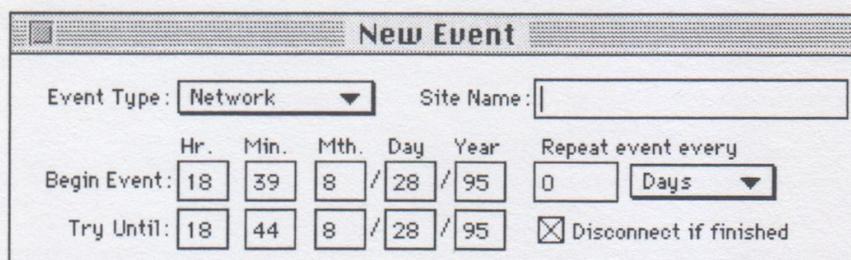
1 Choose Events from the Setup menu.

The List Events window, below, appears.



2 Click New.

The New Event window, below, appears.



3 Make sure that the Event Type pop-up menu is set to Network (the default).

4 Enter Internet in the Site Name field.

5 Enter the date and time you wish your first SMTP mail event to occur into the Begin Event fields.

Times are entered in 24-hour (European or Military) format, with 00:00 equivalent to midnight and 23:00 equivalent to 11:00 PM.

6 Enter the date and time you wish NovaServer to stop trying to connect to your Internet provider into the Try Until fields.

If NovaServer cannot connect to your SMTP site on the first try, it continues trying to connect until the time specified in the Try Until fields. We suggest setting these fields to 5 to 10 minutes later than the Begin Event fields.

7 Enter an appropriate repeat interval in the Repeat field, and choose the desired unit from the pop-up menu.

The frequency of your connections is entirely up to you. We suggest having your NovaServer connect to your Internet provider at least once a day, although once every 4 to 6 hours is better, and once an hour is better still. Internet users are used to electronic mail being very nearly instantaneous.

8 Close the New Event window.

NovaServer asks you if you want to save the new event.

9 Click Yes to save the event.

You can, if you like, set up multiple Network Events for your SMTP site. For example, suppose you run a NovaServer at a school and wish to have your server connect to your Internet provider once every hour during the day, when many people are using it, but only once every four hours during the evening. First, create a Network Event that connects every four hours, starting at noon today. Then create additional network events that connect at 9:00, 10:00, 11:00, 13:00, 14:00, 15:00, and 17:00 PM (skipping 12:00 and 16:00 since they are already covered by the first event). Set these additional events to repeat once a day.

To temporarily disable a particular SMTP event, click the appropriate Network Event in the List Events window (choose Events from the Setup menu), then click Disable. You may disable all connections to the site by deactivating the Allow Connections checkbox in the Internet site's editing window. You may disable *all* network events by deactivating the Enable Network Events checkbox in the Gateways panel of the Server Options window (choose Options from the Setup menu).

USING THE INTERNET MAIL GATEWAY

When your Internet gateway has been properly installed and configured, users can simply enter any Internet address (such as sales@resnova.com) in the To field of an electronic letter. NovaServer, upon noticing the @ symbol in the electronic mail address, automatically places the mail in the outgoing message queue for the Internet site.

Similarly, Internet mail addressed to users of your server is automatically be sorted and delivered to the proper mailbox by NovaServer. Spaces in account names should be replaced with periods or underscores when addressing mail to NovaServer users from the Internet. For example, John Smith's Internet address might be John_Smith@yourserver.com. (Some NovaServer operators prefer to give users short Unix-style account IDs without spaces, such as jsmith, for consistency with the rest of the Internet.)

SETTING UP A USENET NEWS GATEWAY

- *The features described in this section require an Internet connection and the NovaServer NNTP Option.*

Usenet newsgroups are the message forums of the Internet, with over 15,000 separate discussion areas, millions of readers, and gigabytes of message traffic per day. NovaServer lets you connect your server's message forums to Usenet newsgroups, allowing your server's users to participate in these global discussions. There are several steps involved in setting up a Usenet news, or NNTP (Net News Transfer Protocol) gateway:

- Tell your Internet provider what you need
- Set up an NNTP site
- Enter the list of newsgroups you wish to receive
- Create a Network Event for your NNTP site
- Select the Message Import priority

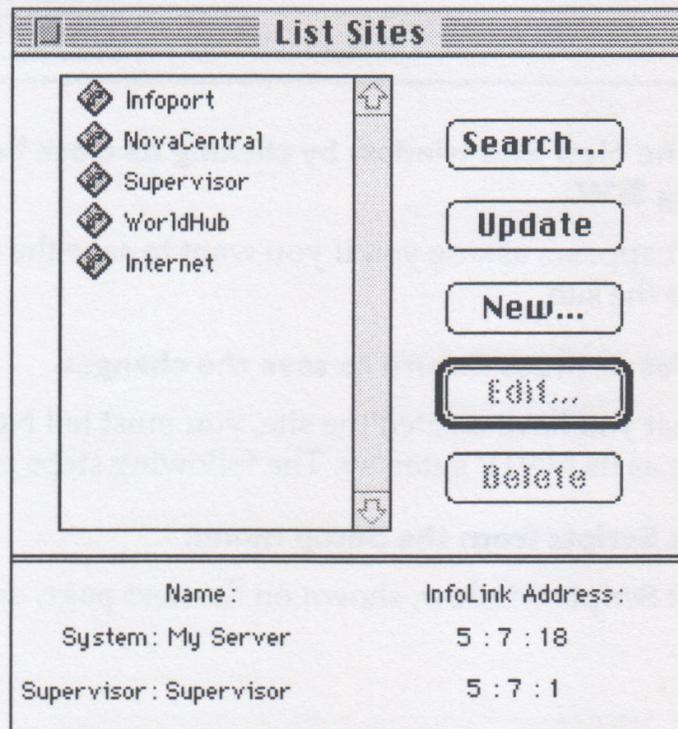
Tell your Internet provider what you need. While NovaServer is an information server, it uses client protocols to talk to NNTP news servers. In other words, to your Internet provider, your NovaServer looks like a newsreader program, like Tin or NewsWatcher. Your Internet provider needs to be aware of this, because otherwise they may assume you are running an NNTP server of your own, or using UUCP.

Set up an NNTP site. NovaServer needs to know the address of your Internet provider's news server. You tell it by creating a NNTP site.

To create an NNTP site:

1 Choose Network Sites from the Setup menu.

The List Sites window (below) appears.



2 Click New.

The New Site window appears.

3 Choose NNTP from the Gateway Type pop-up menu.

4 Choose TCP/IP from the Connection Type pop-up menu.

It is theoretically possible to connect to an NNTP server over AppleTalk or even directly with a modem, but it would be highly irregular. Nearly all NNTP servers are accessed through TCP/IP.

5 Enter NNTP into the Name field.

6 Enter the Internet address of your Internet provider's NNTP news server in the Network Address field.

You may use either the fully qualified domain name of the server (for example, news.provider.com) or its dotted decimal IP address (such as 204.74.76.11).

When you are finished, your NNTP site should look like this:

Gateway Type:	Connection Type:	<input checked="" type="checkbox"/> Lock Site
NNTP	TCP	<input type="checkbox"/> Share Site
Name:	Network Address:	<input checked="" type="checkbox"/> Allow Connections
NNTP	news.provider.com	<input checked="" type="checkbox"/> Return Invalid Mail
		Request Update
		Send Update

7 Close the New Site window by clicking its close box or by pressing ⌘W.

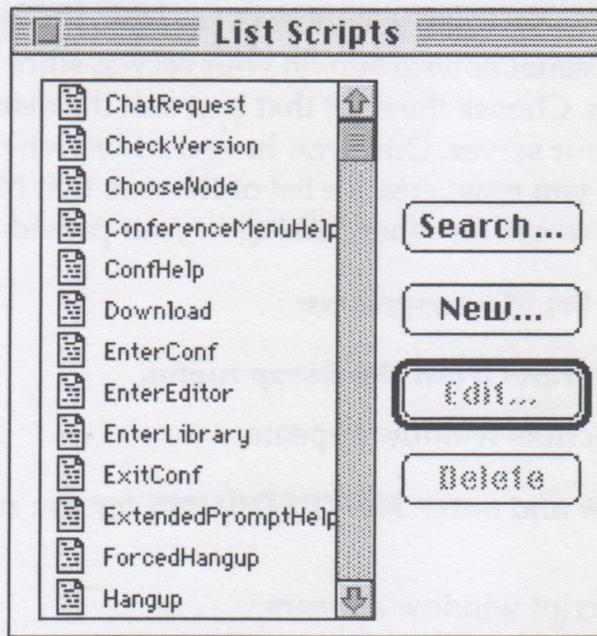
An alert appears asking you if you want to save the changes you made to the site.

8 Click Yes or press Return to save the changes.

Now that you have created the site, you must tell NovaServer to use that site as its NNTP gateway. The following steps accomplish this.

9 Choose Scripts from the Setup menu.

The List Scripts window, shown on the next page, appears.

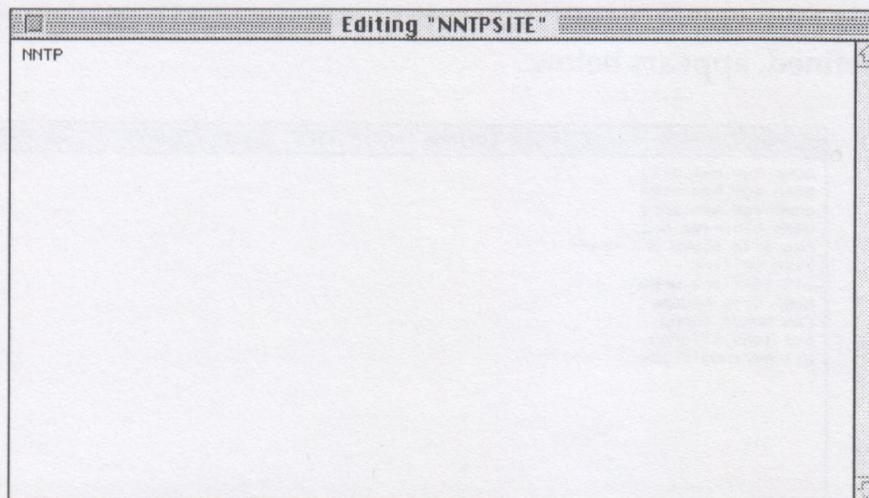


- 10 Click New and enter NNTPSITE for the name of the new script.**

A blank script window appears.

- 11 Enter NNTP into the script.**

When you are done, the Editing NNTPSITE window should appear as shown below.



- 12 Close the script window.**

NovaServer asks if you want to save the changes you have made to the script.

- 13 Click Yes or press Return to save the NNTPSITE script.**

Enter the list of newsgroups you wish to receive. It's impractical to carry every single Usenet newsgroup on your server, since there are over 15,000 of them. Choose the ones that best suit the needs and interests of the users of your server. Once you have decided which newsgroups you wish to carry, you must create a list of them so that NovaServer knows which groups to ask for when talking to your provider's news server.

To enter the list of newsgroups:

1 Choose Scripts from the Setup menu.

The List Scripts window appears.

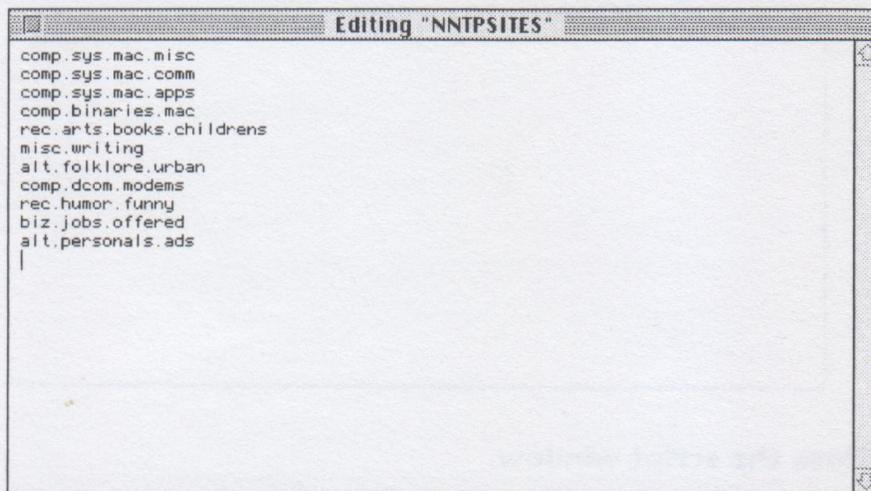
2 Click New and enter NNTPFORUMS for the name of the new script.

A blank script window appears.

3 Enter the name of each Usenet newsgroup you wish to receive on a separate line.

The order is unimportant. NovaServer ignores any text beyond the first blank line in the file, so you may also enter the names of other newsgroups after a blank line to temporarily deactivate the retrieval of those newsgroups. This is also a good place to store notes to yourself about your NNTP setup.

A sample NNTPFORUMS script, with several Usenet newsgroups defined, appears below.



```
comp.sys.mac.misc
comp.sys.mac.comm
comp.sys.mac.apps
comp.binaries.mac
rec.arts.books.childrens
misc.writing
alt.folklore.urban
comp.dcom.modems
rec.humor.funny
biz.jobs.offered
alt.personals.ads
|
```

4 Close the script window.

NovaServer asks if you want to save the changes you have made to the script.

5 Click Yes or press Return to save the NNTPFORUMS script.

Create message forums for your newsgroups. Every Usenet newsgroup you receive must have a corresponding message forum on your server; otherwise, NovaServer won't know where to put the messages for a newsgroup and therefore discards them. You must also set the Network options for the message forum so that messages your users post to the forum are sent out through the NNTP gateway.

To set up a message forum for a Usenet newsgroup:

- 1 Open the Menu Editor (choose Menus from the Setup menu) and navigate to the menu into which you want to place the newsgroup.**

We assume in these instructions that you are already familiar with using the Menu Editor. If you are not, please see Chapter 4, "Creating Your Server's Menu Structure."

- 2 Drag a message forum icon into the menu window.**

The Editing Message Forum window appears.

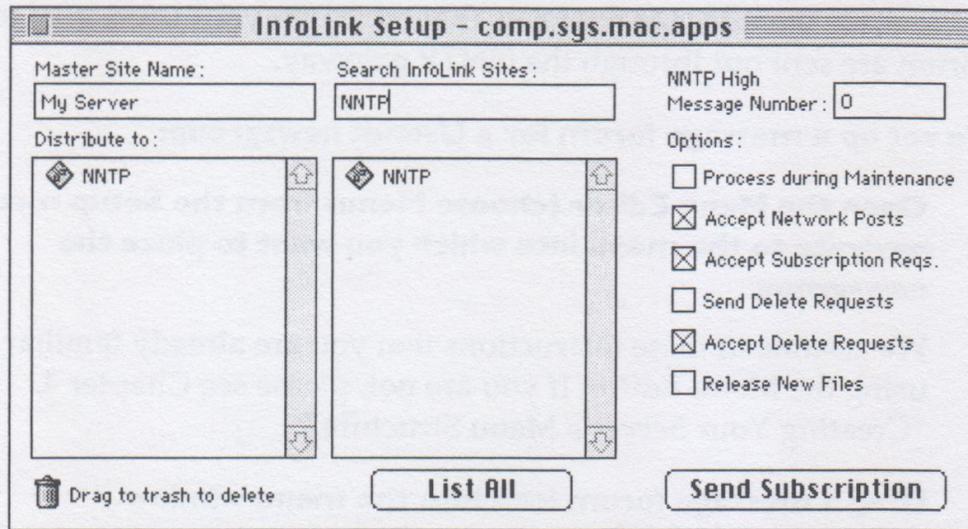
The screenshot shows a dialog box titled "Editing 'Unnamed 1' Message Forum". The dialog contains several input fields and checkboxes. The "Name" field is filled with "comp.sys.mac.apps", and the "Key" field is filled with "1". The "Read Level" and "Write Level" fields each contain four "0" characters. The "Access Group" and "Moderator Group" fields are empty. The "Purge after" field is set to "7" days. There are three checkboxes: "All Posts Anonymous", "Send Post Bulletins", and "Use Real Names", all of which are unchecked. On the right side, there is a list box containing "NS Files" and "Forum Attachments". At the bottom right, there are four buttons: "Folder", "Network", "Cancel", and "Save".

- 3 Enter the name of the newsgroup into the forum's Name field, and set the other options in this window as desired.**

The name you give the message forum must match the name of the Usenet newsgroup as specified in the NNTPFORUMS script you created earlier. If the name of the newsgroup is longer than 30 characters (the maximum length of the name of a NovaServer message forum), use the last thirty characters of the newsgroup name as the message forum name. The newsgroup named `comp.infosystems.www.browsers.mac`, then, would be entered as `p.infosystems.www.browsers.mac`.

4 Click the Network button.

The InfoLink Setup window appears. (The one below shows the settings changed as described in the following steps.)



5 Enter your NovaServer's site name into the Master Site Name field.

6 Enter NNTP in the Search InfoLink Sites field, and wait for a few seconds.

NovaServer finds the NNTP site and displays it in the list below the Search InfoLink Sites field.

7 Drag the NNTP site from the InfoLink Sites field to the Distribute To list.

NovaServer adds the NNTP site to the message forum's distribution list, allowing messages posted to the forum to be sent back to the appropriate Usenet newsgroup.

8 Activate the Accept Network Posts checkbox if desired.

If this checkbox is activated, other servers that communicate with your server by InfoLink, and that subscribe to this message forum, may post messages to the forum. Once these messages have been posted to your server, they are distributed to the Internet. This checkbox does not affect messages that are received from your Internet provider's NNTP server.

With this checkbox activated, sites without an Internet connection may carry Usenet newsgroups by InfoLinking with a site that does have an Internet connection. The site with the Internet connection becomes the master site for the forum.

9 Activate the Accept Subscription Reqs. checkbox if desired.

If this checkbox is activated, other servers that communicate with your server by InfoLink may subscribe to this message forum like any other InfoLinked message forum. Allowing other server operators to request subscriptions reduces the amount of time required to maintain your distribution list, but also reduces your control over which other sites receive the forum. This way, even sites without an Internet connection may carry Usenet newsgroups by InfoLinking with a site that does have an Internet connection.

10 Activate the Process during Maintenance checkbox if desired.

If this checkbox is activated, NovaServer delays importing new messages received from your Internet provider's NNTP server until a Maintenance Event occurs. Otherwise, messages are imported in the background while the server runs.

11 Set the NNTP High Message Number, if desired.

NovaServer uses this field to remember which messages it has already retrieved from your Internet provider's NNTP server. A value of zero means that the first time NovaServer connects to the NNTP site, it retrieves all the messages on your Internet provider's news server, giving you a bit of history. (Most Internet providers carry at least a few days' worth of old messages.) Under normal circumstances, you should not change this field; changing it after you have started receiving messages can cause missed or duplicate forum messages.

There are two cases when you might want to change this number. If you change Internet providers, or if your Internet provider sets up a new NNTP server, the message numbers NovaServer requests will probably be invalid on the new server. In this case, you may want to delete all messages from the affected forums and set this number to zero (or set it as discussed below).

You can also adjust the NNTP High Message Number if you do not wish to receive all the messages currently on your provider's NNTP server, to avoid an inrush of new messages. (This is especially important if you are lucky enough to have a provider that retains more than a week's worth of old messages.) You can set the NNTP High Message Number manually to skip the retrieval of some or all of your provider's message history.

To do this, you need to find out the highest message number your provider has in each newsgroup you wish to carry. Log on to port 119 of your provider's NNTP server using the Unix Telnet command (on a shell account), NCSA Telnet, or a similar program. You should see a message like this (the exact wording may be different):

```
200 news.provider.com InterNetNews NNTP server INN
1.4 22-Dec-93 ready.
```

Enter the command mode `reader` and press Return. The news server should respond with another similar message (again, it may be slightly different than the first one; however, it should not be an error message).

Next, enter the command `group` followed by the name of the newsgroup for which you want to determine the high message number. For example, to check the high message number on the newsgroup `comp.sys.mac.apps`, enter:

```
group comp.sys.mac.apps
```

The NNTP server replies with a line that looks like this:

```
211 119 106850 107102 comp.sys.mac.apps
```

The last number, immediately before the name of the newsgroup, is the high message number for that particular group. Make a note of it. (The first number is always 211; the second is the number of messages currently available for that group; the third is the low message number for the group.)

Enter additional `group` commands for each newsgroup and note the responses. When you are finished, send the NNTP server a `quit` command.

If you would like to receive a few (50 or so) old messages, instead of all of them, for a particular group, simply subtract 50 from the NNTP server's high message number and enter the result into the NNTP High Message Number field in the InfoLink Setup window. To receive no new messages, of course, enter the NNTP server's high message number with no modifications. (New messages are constantly arriving at most news servers, so you may get a few messages the first time you connect even if you do this.)

12 Close the InfoLink Setup window.

13 Enter a realistic number of days in the Purge After field.

Some Usenet newsgroups are very busy, receiving 100, 200, or even more messages a day. If you keep a full 30 days' worth of messages on your server, you may run out of space on your hard drive more quickly than you expected. If you don't know what the traffic on a specific newsgroup is like, you might elect to keep just 7 days' worth of messages initially; you can later revise your estimate as you monitor the traffic in that newsgroup.

14 Close the Editing Message Forum window.

NovaServer asks if you want to save the changes you've made to the message forum.

15 Click Yes or press Return to save your changes.

Repeat this procedure for every Usenet newsgroup you wish to receive on your server.

Create a Network Event for your NNTP site. Usenet tends to be very busy. Depending on which newsgroups you decide to carry, you should create a Network Event to connect you to your Internet provider for message exchange on a regular basis—every few hours, if possible—to avoid a large backlog of messages.

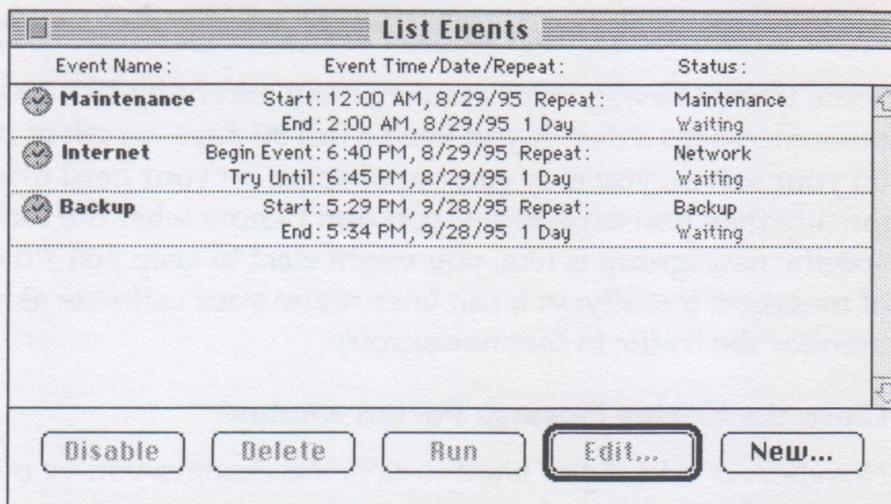
If you are using a dial-up SLIP or PPP connection, when the Network Event activates, your server asks MacTCP to open a connection; MacTCP then asks your SLIP or PPP extension to dial the modem and make the connection. The result: your server will automatically dial your Internet provider when necessary. (If your server is connected to a dedicated Internet line, your server does not need to dial out.) Once the connection has been made, NovaServer will transmit any outgoing newsgroup replies and pick up any new messages.

Ask your Internet provider to set up an idle timer for your SLIP or PPP connection that automatically disconnects after a set period of inactivity, or use the idle timer built into MacPPP or your modem, to ensure that your server does not remain connected to your Internet provider longer than it needs to be. Tying up your provider's resources by remaining connected longer than necessary is considered unfriendly.

To create a Network Event for your NNTP site:

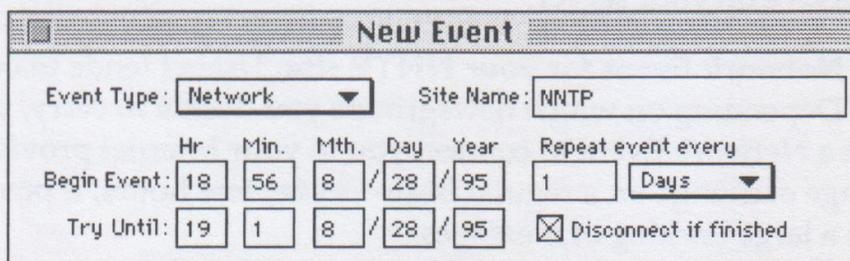
I Choose Events from the Setup menu.

The List Events window, shown on the next page, appears.



2 Click New.

The New Event window, below, appears.



3 Make sure that the Event Type pop-up menu is set to Network (the default).

4 Enter NNTP in the Site Name field.

5 Enter the date and time you wish your first NNTP news event to occur into the Begin Event fields.

Times are entered in 24-hour (European or Military) format, with 00:00 equivalent to midnight and 23:00 equivalent to 11:00 PM. If you are also using NovaServer's SMTP mail gateway, you may wish to schedule the times of your NNTP events to coincide with your SMTP events (since you're going to be connected to your Internet provider then anyway).

6 Enter the date and time you wish NovaServer to stop trying to connect to your Internet provider into the Try Until fields.

If NovaServer cannot connect to your NNTP site on the first try, it continues trying to connect until the time specified in the Try Until fields. We suggest setting these fields to 5 to 10 minutes later than the Begin Event fields.

7 Enter an appropriate repeat interval in the Repeat field, and choose the desired unit from the pop-up menu.

The frequency of your connections is entirely up to you. We suggest having your NovaServer connect to your Internet provider at least once a day, although once every 4 to 6 hours is better, and once an hour is better still.

8 Close the New Event window.

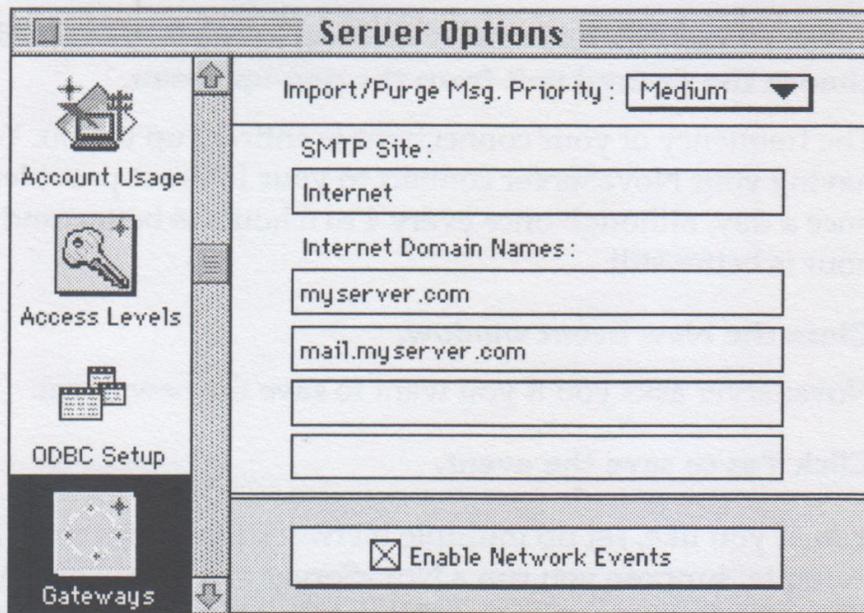
NovaServer asks you if you want to save the new event.

9 Click Yes to save the event.

You can, if you like, set up multiple Network Events for your NNTP site. For example, suppose you run a NovaServer at a school and wish to have your server connect to your Internet provider once every hour during the day, when many people are using it, but only once every four hours during the evening. First you would create a Network Event that connects every four hours, starting at noon today. Then you would create additional network events that connect at 9:00, 10:00, 11:00, 13:00, 14:00, 15:00, and 17:00 PM (skipping 12:00 and 16:00 since they are already covered by the once-every-four-hours event). You would set these additional events to repeat once a day.

Should you need to temporarily disable a particular NNTP event, you can effectively do this by clicking the appropriate Network Event in the List Events window (choose Events from the Setup menu), then clicking Disable. You may disable all connections to a site by deactivating the Allow Connections checkbox in the NNTP site's editing window. You may disable *all* network events (including InfoLink and Internet mail exchange) by deactivating the Enable Network Events checkbox in the Gateways panel of the Server Options window (choose Options from the Setup menu).

Select the Message Import priority. If you have *not* activated the Process During Maintenance checkbox on any of your message forums, NovaServer imports new messages (moving them from a single message batch received through the NNTP gateway into the appropriate message forums) in the background when it notices there are new messages waiting.



You can choose how much time NovaServer allocates to this task in the Gateways panel of the Server Options window (choose Options from the Setup menu, then click the Gateways icon in the scrolling list on the left side of the window). The Import/Purge Msg. Priority pop-up menu can be set to Low, Medium, or High. Low priority has very little impact on your server's responsiveness, but may take a long time to import the messages you have received. Conversely, High priority may make your server seem sluggish and unresponsive but quickly moves the messages to where they belong.

Missing messages. The first time you receive Usenet messages from an NNTP server, you may notice a number of messages on your server that contain only the notice, "This is a missing message." These messages are placeholders representing message threads joined after the original message was posted. (In other words, the original message was not retrieved, either because your provider's NNTP server no longer has it, or because you set the NNTP High Message Number to a number higher than the original message's number, so NovaServer never asked for it.)

The "Missing message" notice is normal and will go away as the incomplete message threads expire. If you have a reliable news provider, you will rarely see this phenomenon after the first few weeks of running your server.

USING THE USENET NEWS GATEWAY

From a user standpoint, a Usenet newsgroup acts just like any other message forum on your server. Only the intended audience differs. We recommend that you instruct users in the basics of netiquette:

- Keep messages on-topic
- Don't post advertising where it doesn't belong
- Read for a while before jumping into a discussion
- Consult the group's FAQ (Frequently Asked Questions list) before asking a question
- Quote as little of the message you're replying to as possible
- Use electronic mail when your reply may not be of interest to everyone
- Don't make fun of others' spelling or grammar errors
- Treat others as you want to be treated

SETTING UP TELNET-IN CONNECTIONS

- *The features described in this section require a full-time Internet connection and the NovaServer TCP/IP Option.*

If your server is connected to the Internet on a full-time basis, users on the Internet can access your NovaServer using the standard Telnet service. Connecting to your server with Telnet displays NovaTerm's text user interface (TTY, VT100, or ANSI). To allow users to connect with Telnet, you must create Telnet nodes on your server. The number of simultaneous inbound Telnet connections your server can support is limited to the number of Telnet nodes.

Internet users can also connect to your server using the NovaTerm graphical client software for Macintosh and Windows; however, you do not need to set up a TCP/IP Telnet node for these users. NovaServer accepts NovaTerm users (up to your license limit) regardless of the number of Telnet nodes your server has.

To create Telnet nodes:

1 Choose Nodes from the Setup menu.

The Configure Node Settings window (below) appears.

Type :	Port Name :	Idle :
1 Local terminal		5
2 Serial	Modem Port	5
3 Serial	Printer Port	5
4 TCP/IP	Telnet	5
5 TCP/IP	Telnet	5
6 TCP/IP	Telnet	5

Add Node Type : Select : Timeout in Mins.

2 Choose TCP/IP from the Add Node Type pop-up menu at the bottom of the window.

3 Choose Telnet from the Select pop-up menu.

4 Click the node before which you wish the Telnet node to appear.

For example, if you want the new Telnet node to be the first node on the list, click the existing first node. All existing nodes are shifted down the list when the new node is added. If you want the new node to appear last on the list, click the blank space after the last node.

5 Click the Add button to add the new node.

The new node is added and displayed in the Nodes window.

6 If you wish to add additional nodes, repeat steps 2-6 until all nodes have been added.

7 Close the Configure Node Settings window by clicking its close box or by pressing **⌘W**.

An alert appears reminding you that you must quit and restart the server before the new nodes will be available.

8 Click OK or press Return to clear the alert.

9 Choose Quit from the File menu to exit NovaServer.

NovaServer quits, and you are returned to the Finder.

10 Re-launch NovaServer by double-clicking the NovaServer application to install your new nodes.

SETTING UP TELNET-OUT CONNECTIONS

- *The features described in this section require a full-time Internet connection and the NovaServer Telnet Option.*

If your server is connected to the Internet on a full-time basis, users of your server can connect to other Internet hosts using NovaServer's outbound Telnet service. Telnet services are text-based, so NovaTerm users who request an outbound Telnet connection interact with the service they connect to in NovaTerm's VT100 terminal window.

You allow users to contact other Internet hosts by adding Connect Out components to your server's menu structure. Each Connect Out component can connect to a different host, or you may leave the host address blank to allow the user to enter their own host address.

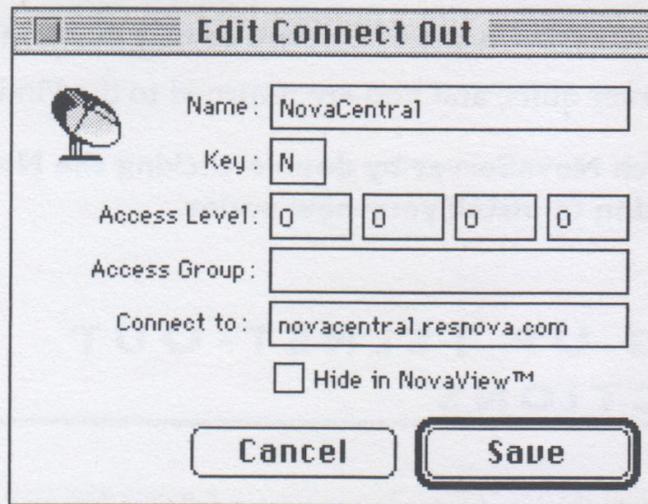
To add a Connect Out component to your server:

- 1 Open the Menu Editor (choose Menus from the Setup menu) and navigate to the menu into which you want to place the Connect Out component.**

We assume in these instructions that you are already familiar with using the Menu Editor. If you are not, please see Chapter 4, "Creating Your Server's Menu Structure."

- 2 Drag a Connect Out icon into the menu window.**

The Connect Out settings window, shown on the next page, appears.



- 3 Enter the desired Telnet address into the **Connect To** field, and set the other options in this window as desired.

If you leave the **Connect To** field blank, users are prompted for the address of their host.

- 4 Close the **Editing Connect Out** window.

WORLD WIDE WEB BROWSING

- *The features described in this section require a full-time Internet connection and the NovaServer Web Out Option.*

If your server is connected to the Internet on a full-time basis, users of your NovaServer who are running the NovaTerm graphical client software for Macintosh and Windows can access not only HTML documents stored on your machine, but also documents stored on servers around the world. You can give users this power in several ways:

- **Add Get URL components** to your server that access World Wide Web documents
- **Add hotlinks to HTML documents** stored on your server (including electronic mail messages and message forum articles) that point to documents on the Web
- **Write NovaScript scripts** that use the `requestURL` command to get documents from the World Wide Web

Get URL components. In Chapter 4, "Creating Your Server's Menu Structure," we discussed the Get URL component and how it could be used to retrieve elements from your NovaServer, providing a form of aliasing that allows the same resource to be accessible from many different menus.

You can use external URLs (URLs that point to resources on other servers) to allow users to browse those sites. Any standard URL beginning with `http` will work. (NovaServer is currently unable to access FTP, Gopher, Telnet, or other forms of external URLs. We may add these features in a future release of NovaServer.)

To create an external Get URL component:

- 1 Open the Menu Editor (choose Menus from the Setup menu) and navigate to the menu into which you want to place the Get URL component.**

We assume in these instructions that you are already familiar with using the Menu Editor. If you are not, please see Chapter 4, "Creating Your Server's Menu Structure."

- 2 Drag a Get URL icon into the menu window.**

The Editing Get URL window, below, appears.

The screenshot shows a dialog box titled "Editing Get URL". On the left side, there is a small icon of a document with a plus sign. The dialog contains the following fields and controls:

- Name:** A text box containing the text "Unnamed".
- Key:** An empty text box.
- Access Level:** Four spin boxes, each containing the number "0".
- Access Group:** An empty text box.
- Get URL:** A large, empty text box.
- NovaView Icon:** A dropdown menu with "Document" selected.
- Buttons:** "Cancel" and "Save" buttons are located at the bottom right of the dialog.

- 3 Enter the desired URL into the Get URL field, and set the other options in this window as desired.**
- 4 Close the Editing Get URL window.**

Hotlinks in Server Documents. Documents stored on your server, including electronic mail and message forum articles, can be HTML documents in their own right, with hotlinks pointing to resources on or off of your servers. It can be useful to mail or post messages to your users containing the latest and greatest Web sites you've discovered.

Within any HTML document on your server, be it a standalone file stored in the HTML Files folder, or a mail or forum message, you can use a tag of the form: `` to specify a link to an external Web server. Any standard URL beginning with `http` will work. (NovaServer is currently unable to access FTP, Gopher, Telnet, or other forms of external URLs. We may add these features in a future release of NovaServer.)

See Chapter 16, "HTML Reference," for more information on creating HTML documents.

NovaScript scripts. Your NovaScript scripts can open Web documents too, using the `requestURL` statement. Any standard URL beginning with `http` will work. (NovaServer is currently unable to access FTP, Gopher, Telnet, or other forms of external URLs. We may add these features in a future release of NovaServer.) See Chapter 15, "NovaScript Reference," for more information on the `requestURL` statement.

RESTRICTING WEB ACCESS

Depending on your server's intended audience, you may or may not want to allow users to have access to the entire World Wide Web. It would hardly be appropriate to give third graders access to the Penthouse home page, for example. While you can define a set of starting points using the techniques described in the section above, users can usually go anywhere the links lead them once they're out on the Web. Unless, that is, you use NovaServer's built-in features for restricting Web access to these users.

Each account has a Web Access setting which determines whether the user can access any URL (Full Access), no sites (None), only URLs which are explicitly permitted (Default Deny), or all URLs except those which are explicitly disallowed (Default Allow). You can also select the initial setting of this option for new accounts in the Accounts panel of the Server Options window (choose Options from the Setup menu).

The list of allowed and disallowed URLs is a simple text file named URL Control List, stored in the same folder as the NovaServer application. This text file can be created with any word processor which can save in standard ASCII format (that is, most of them), SimpleText, or NovaTerm.

The URL Control List contains a sequence of partial URLs prefaced with a + or - symbol. The * character is used as a wildcard in partial URLs and represents any number of characters. The + symbol indicates that URLs beginning with the given text are approved; the - symbol indicates that URLs beginning with the given text are disapproved. When NovaServer encounters a Web URL (that is, a URL that is not on the server itself), it scans this list, starting at the beginning and proceeding sequentially through the file, looking for a match. The first match found decides whether the URL is accepted or rejected.

Here's an example. Suppose you want your users to be able to access all the articles on the Playboy[®] Web server, but not anything else from that site. (Everyone knows the articles are the best thing in the magazine!) Let's further assume that all the articles are conveniently stored in their own directory on the Playboy server, so that all the articles have URLs that start with `http://www.playboy.com/articles/`. The following two lines in the URL Control List permit access to the articles but block all other requests:

```
+http://www.playboy.com/articles/*  
-http://www.playboy.com/*
```

Let's see what happens when the user requests:

```
http://www.playboy.com/pictures/missmay.jpg
```

The URL specified by the Playboy-savvy user does not begin with `http://www.playboy.com/articles`, so the first line does not match. However, the second line does match, since the URL does begin with `http://www.playboy.com/`. In this case, then, the URL is rejected.

If none of the entries in the URL Control List match the URL, the user is either allowed to access the URL (if their Web Access is Default Allow) or denied access to the URL (if their Web Access is Default Deny).

- *The features described in this section require a full-time Internet connection and the NovaServer Web Publishing Option.*

If your server has a dedicated connection to the Internet, Internet users can access HTML documents stored on your NovaServer (in the HTML Files folder, inside the NS Files folder) using any standard browser, including Mosaic,TM Netscape,TM and even Lynx. The URLs that Internet users use to access documents stored on your server look like this:

```
http://myserver.com/file/document.htm  
http://myserver.com/file/folder/document.htm
```

Replace `myserver.com` with the Internet domain name of your NovaServer, and `document.htm` with the name of the desired HTML document. The first URL retrieves a document stored in your server's NS HTML Files folder; the second URL retrieves a document stored in a folder inside the HTML Files folder. If a document name is not specified, NovaServer retrieves the document called `default.htm` in either the HTML Files folder or in the specified subfolder of the HTML Files folder.

Specifying your server's domain name alone (for example, `http://myserver.com/`) retrieves the `default.htm` document from the HTML Files folder.

You may want to have your Internet provider set up an alias like `www.myserver.com` that points to `myserver.com`, since many Internet veterans are used to accessing machines named `www.something.com` to access Web documents.

HTML documents that you wish to be made available on the Web must have a filename suffix of `.htm`. (Users who are using NovaTerm to access your server can also read these documents.) Documents whose names end in `.html` are accessible only to users who are accessing your server with NovaTerm.

Avoid using spaces in the names of documents which will be published on the Web. Spaces in Web document names must be entered as `%20`, a convention which quickly becomes unwieldy for Web users. (NovaTerm does this conversion for you automatically, replacing all entered spaces with `%20` when transmitting URLs, but other browsers may not.)

Links embedded in your HTML documents (inline images, hotlinks to other documents, and so on) should follow the same format. You can also use abbreviated URLs to refer to files in the same folder as the file being served. For example, if a document named `info.htm` was stored in the HTML Files folder, and included a reference to an inline image called `icon.jpg` in the same folder, the reference could be written in either of the following ways:

```
<IMG SRC=icon.jpg>
```

```
<IMG SRC=http://myserver.com/file/icon.jpg>
```

In the first case, the user's browser remembers that `info.htm` came from the URL `http://myserver.com/file/info.htm`, and knows to add `http://myserver.com/file/` to the beginning of any reference that does not include a full URL.

There is one exception to this convention: the `default.htm` file. This file actually has two separate URLs:

```
http://myserver.com/
```

```
http://myserver.com/file/default.htm
```

The short name, which is easy for your users to remember, is internally translated to the longer one by NovaServer. If you use partial references in the `default.htm` document, the user's browser may try to expand the reference to something like the following:

```
http://myserver.com/icon.jpg
```

This is not a valid URL to NovaServer, since the `file` keyword is not present. In your `default.htm` document, then, you should either use full URLs to reference other files on your server, or include a `<BASE HREF=http://myserver.com/file/>` tag in the document header.

WIDE AREA INFORMATION SERVERS (WAIS)

- *The features described in this section require a full-time Internet connection and the NovaServer AppleSearch Option.*

NovaServer also lets your users access Wide Area Information Servers (WAIS) on the Internet through AppleSearch.

AppleSearch is a powerful, fast search engine that allows you to index collections of documents for retrieval by keyword. The AppleSearch server component, which is a part of NovaServer, lets callers access an AppleSearch *info source*, or collection of documents. Documents that match the user's search terms can be viewed or downloaded. See your AppleSearch administrator manual for instructions on adding an Internet-accessible WAIS database as an AppleSearch source.

For best performance, we recommend running the AppleSearch server on a separate machine from your NovaServer. Set up an account for NovaServer to log on to the AppleSearch server and install the AppleSearch client software on the machine running NovaServer. (Although NovaServer and AppleSearch are both servers, NovaServer acts as an AppleSearch client, so it needs client software, and an account on the AppleSearch server.) Many users can use a single AppleSearch server through this single account, so you don't need multiple AppleSearch client licenses unless you are running a multi-machine NovaServer virtual server.

You should set up sources on your AppleSearch server to contain the documents and refer to the WAIS servers you want to search. Make sure the AppleSearch account you created for NovaServer has access to all the sources you want users of your server to be able to search. (If you want to restrict some sources to certain users, you can set up multiple AppleSearch components on your NovaServer and use NovaServer's security features, not AppleSearch's, to ensure that users don't have access to sources you don't want them to use.)

You must also enable AppleSearch in the General panel of NovaServer's Server Options window. (Choose Options from the Setup menu to open the Server Options window.) Once that is done, you are ready to install and configure your AppleSearch components.

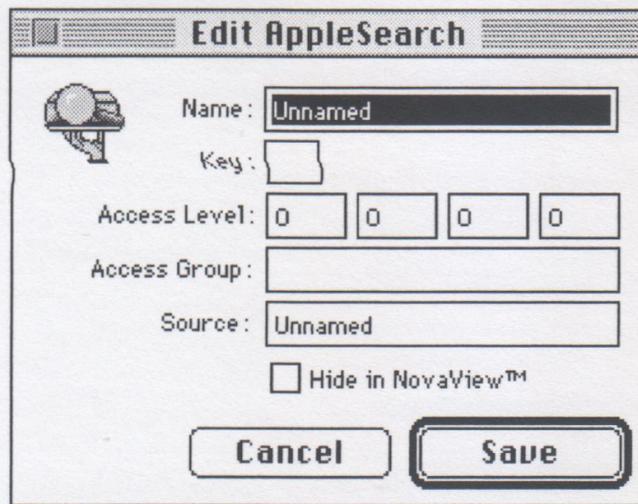
To add an AppleSearch component:

- 1 Open the menu editor (choose Menus from the Setup menu) and navigate to the menu into which you want to place the Get URL component.**

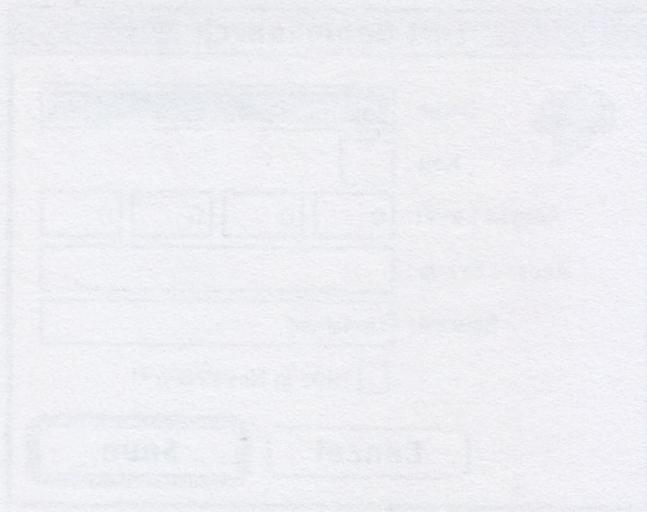
We assume that you are already familiar with using the menu editor. If you are not, please see Chapter 4, "Creating Your Server's Menu Structure."

- 2 Drag an AppleSearch icon into the menu window.**

The AppleSearch settings window, shown on the next page, appears.



- 3 Enter the desired AppleSearch source into the Source field, and set the other options in this window as desired.**
- 4 Close the Edit AppleSearch window.**



1. Select the device type and the device name.
2. Select the device type and the device name.
3. Select the device type and the device name.

.....

NETWORKING WITH OTHER GATEWAYS

- *In this chapter, you'll learn how to connect your NovaServer to QuickMail, and how to install and use other third-party gateways.*

INSTALLING AND CONFIGURING THE QUICKMAIL GATEWAY

If your organization already uses CE Software's QuickMail™ system, you can connect NovaServer to QuickMail using the optional QuickMail gateway software available from ResNova. Your QuickMail server becomes a NovaServer site (which your NovaServer users can mail to using an address like John Smith/QuickMail); your NovaServer becomes a QuickMail mail center.

File Sharing. In order for the two servers to exchange mail, the folder containing the NovaServer application must be mounted on the QuickMail machine's desktop. The best way to do this is to use System 7's Sharing Setup control panel to start up personal file sharing on the NovaServer, then use the Sharing menu item (on the Finder's File menu) to share the NovaServer folder and its contents. To prevent others on your local area network from disrupting this folder, use the Users and Groups control panel to create a user account specifically for the QuickMail server to use when logging on, and assign that user as the owner of the NovaServer folder.

On the QuickMail server machine, use the Chooser to mount the NovaServer folder, clicking the Remember My Name And Password radio button. The Remounter utility and the AppleShare Setup control panel, both available from Apple, can be useful for making sure that the NovaServer folder is automatically remounted if it is disconnected due to network problems.

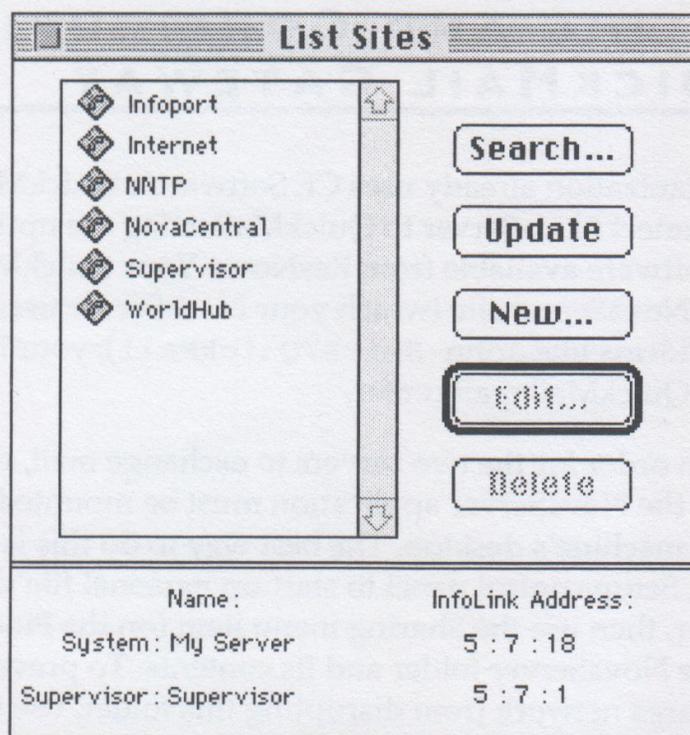
An alternate solution is to run the QuickMail server on the same computer as NovaServer. This, obviously, allows both servers to easily have access to the same folders. We suggest this solution only if both servers see relatively light usage. You'll achieve far better performance by running two separate servers.

Configuring NovaServer. Now you must configure NovaServer so that it knows how to route messages to the QuickMail server. You do this by creating a new Network Site within NovaServer.

To create this site:

1 Choose Network Sites from the Setup menu.

The List Sites window, below, appears.



2 Click New.

The New Site window appears.

3 Choose QuickMail from the Gateway Type pop-up menu.

The New Site window changes to display the options for a QuickMail gateway, as shown on the next page.

4 Enter the desired name for the QuickMail site in the Name field.

We suggest QuickMail, or, if you prefer abbreviations, QM.

5 Close the New Site window.

NovaServer asks you if you want to save the new site.

6 Click Yes.

- *It is not necessary to create a Network event to cause NovaServer to connect to the QuickMail gateway. Mail messages bound for the QuickMail server are saved in a file in the NS Network Mail folder; the QuickMail server accesses this file directly to retrieve messages, and writes a new file into the NovaServer folder for QuickMail messages bound for NovaServer.*

Configuring the QuickMail Server. Finally, you must install the gateway software on your QuickMail server. To do this, copy the NS Gateway file, provided as part of the NovaServer QuickMail Gateway option, into the QA folder, located in the QuickMail server's System folder. In order for the QuickMail server to recognize this gateway, you should quit the QuickMail Administrator (if it's running) and launch it again. Leave the Administrator application running; the NovaServer QuickMail Gateway software requires it.

Create a new Mail Center using the File menu. Name it whatever you like; for simplicity, we suggest NovaServer or NS. Select the NS Gateway from the Gateway pop-up menu and save the new Mail Center. Open the new Mail Center, then choose Configure NovaServer from the File menu.

In the dialog that appears, you must specify the location of the NovaServer application, and the location of the folder NovaServer uses to store documents that have been attached to electronic mail messages. (This folder is usually the Mail Attachments folder, inside the NS Files folder, unless you've changed it in the E-Mail panel of the Server Options window.)

The Configure button lets you specify how often the QuickMail Administrator should run the gateway software, and thus how frequently messages are exchanged between NovaServer and QuickMail. Since the gateway software does not use phone lines or other costly connections, you can tell the QuickMail Administrator to check for new mail every five minutes or so.

For more detailed instructions on configuring QuickMail to work with external gateways, such as the one for NovaServer, see the QuickMail administrator's manual.

THIRD-PARTY GATEWAYS

A number of third-party gateway programs, including gateways for popular electronic mail packages, are available. Look on NovaCentral, the ResNova support server, for an up-to-date list of third-party gateways.

Any third-party gateway you buy should come with its own installation instructions. As a rule, you will copy the gateway software into the NS Externals folder inside the NovaServer folder, then create a new network site for that gateway (choosing the newly installed gateway from the Gateway Type pop-up menu). You may also need to install and configure additional software on the server you are connecting to and/or create a repeating network event to transfer messages through the gateway. The exact details vary but should be explained in the instructions that come with the gateway.

REFERENCE



This section includes chapters designed to help you quickly find answers for your NovaServer questions. These chapters include:

Chapter 14	Server Reference	247
Chapter 15	NovaScript Reference	271
Chapter 16	HTML Reference	297
Chapter 17	Line Editor Reference	311
Chapter 18	Server Directory Structure	315
Chapter 19	MenuMaker Reference	319
Chapter 20	Cable Configuration.....	327

.....
SERVER REFERENCE

- *This chapter serves as a reference to the NovaServer application, allowing you to quickly find out what a particular menu item, button, or pop-up menu does.*

THE FILE MENU

New Menu (%N). Creates a new, untitled folder in the NovaServer menu editor. Inaccessible when the NovaServer menu editor is not open. See Chapter 4, "Creating Your Server's Menu Structure."

Open Item (%O). Opens the selected item in the NovaServer menu editor. Inaccessible when the NovaServer menu editor is not open. If the selected item is a menu component (represented by a folder icon), NovaServer displays the contents of the submenu in a new window. If the selected item is any other type of component, the component's settings window is displayed. See Chapter 4, "Creating Your Server's Menu Structure."

Close (%W). Closes the frontmost window; equivalent to clicking the close box in the window's title bar.

Get Info (%I). Displays the settings window for the selected item in the NovaServer menu editor. Inaccessible when the NovaServer menu editor is not open. See Chapter 4, "Creating Your Server's Menu Structure."

Usage Log. Displays the NovaServer usage log. The usage log contains the details of what each user of your server did from the time they connected until the time they logged off. You can choose which details are recorded in the Log Options panel of the Server Options window (choose Options from the Setup menu).

Server Log. Displays the NovaServer server log. The server log contains information on server activities, recording the time of each startup, shutdown, and event.

InfoLink Log. Displays the NovaServer InfoLink log. The InfoLink log contains information on network activities, including InfoLink, SMTP, and NNTP gateway activity.

Error Log. Displays the NovaServer error log. The error log records every problem or error NovaServer encounters during server operation, and is the first place you should check when troubleshooting. If an error occurs, the error log window is automatically opened so that you can see the error the next time you look at the server.

Quit (⌘Q). Quits the NovaServer application. If any users are logged on, you are prompted for the time period you wish to wait before the server quits. NovaServer then warns all online users that the server is going down after the time you specified, and no new connections are accepted. All modems are taken off the hook to generate a busy signal, and incoming network connections are rejected.

THE EDIT MENU

The Edit Menu contains Macintosh-standard options for copying and editing information, including Undo (⌘Z), Cut (⌘X), Copy (⌘C), Paste (⌘V), Clear (⌘B), and Select All (⌘A). These options behave just as they do in other applications, so we will not discuss them further here.

THE TERMINAL MENU

Most of the options in the Terminal menu work with a specific node on your NovaServer. (The Sysop Available option is the only exception.) You select the node you wish to work on by bringing its terminal window to the front (choosing its node number from the Windows menu if necessary to open the terminal window). These options do not apply to nodes that are hosting NovaTerm callers.

Node. Sets the status of the node associated with the frontmost terminal window. (You can open a terminal window from the Windows menu.) If the frontmost window is not a terminal window, this menu item is not available. Available status settings are:

- **Sleep.** The node is not used by NovaServer. If the node is a serial node, the attached modem is taken off the hook so that it appears busy to callers.
- **Wait for call.** The node is used by NovaServer to answer calls.

Logon Local (%L). Initiates a text-only session on the local node associated with the frontmost terminal window as if a call had been received. (You can open a terminal window by selecting a local node from the Windows menu.) If the frontmost window is not a local terminal window, this menu item is not available.

Disconnect (%H). Disconnects the user connected to the node associated with the frontmost terminal window. (You can open a terminal window from the Windows menu.) If the frontmost window is not a terminal window for a node that is currently serving a caller, this menu item is not available.

Chat. Initiates a chat session with the user connected to the node associated with the frontmost terminal window. (You can open a terminal window from the Windows menu.) Unlike the conference and chat rooms that NovaServer supports between users who are logged onto the server, this chat session is between the person physically at the server and the user connected to the node. Whatever the user is doing is suspended while the chat is in progress. To end the chat, choose Chat from the Terminal menu again. If the frontmost window is not a terminal window for a node that is currently serving a caller, this menu item is not available.

Sysop Available. Determines the action of the Chat Request server component. When Sysop Available is activated (indicated by a checkmark next to the menu item in the Terminal menu), a user-initiated chat request causes NovaServer to audibly request the system operator's attention. Otherwise, the chat request is ignored. To answer a chat request, choose the node requesting the chat from the Windows menu, then choose Chat from the Terminal window. (Nodes with chat requests pending have an asterisk next to them in the Windows menu.)

THE SETUP MENU

Nodes. Displays the Configure Node Settings window (below).

Type:	Port Name:	Idle:
1 Local terminal		5
2 Serial	Modem Port	5
3 Serial	Printer Port	5
4 TCP/IP	Telnet	5
5 TCP/IP	Telnet	5
6 TCP/IP	Telnet	5

Add Node Type: Timeout in Mins.

To set up your nodes:

1 Choose Nodes from the Setup menu.

The Configure Node Settings window (above) appears.

2 Choose the desired type of node from the Add Node Type pop-up menu at the bottom of the window.

Available node types include:

- **AppleTalk.** For connecting to the server over an AppleTalk local area network
- **Comm Toolbox.** For connecting to the server using a protocol defined in a Communications Toolbox tool
- **Local.** For connecting to the server from the same machine it's running on.
- **Serial.** For connecting to the server with a modem or another serial device.
- **TCP/IP.** For connecting to the server with the TCP/IP protocol over an Ethernet LAN or the Internet.

3 Select any necessary additional options from the pop-up menu that appears next to the Add Node Type menu.

The actual name of this pop-up menu varies depending on the type of node you're adding. You may skip this step for Local and AppleTalk nodes, which do not require additional configuration.

- **For Comm Toolbox nodes**, select a communications tool and, if necessary, configure it.
- **For Serial nodes**, select a serial port and a modem type. Be careful not to assign the same port to two nodes, or to assign the port that's being used by a SLIP/PPP modem or ISDN connection to a node. If you are using the Mac's built-in LocalTalk networking, rather than Ethernet, do not assign the Printer port to a node. (You may use the Printer port for a node if you are using Ethernet.)
- **For TCP/IP nodes**, select whether you wish to add a Telnet node or a SMTP node. Telnet nodes allow users to connect to the server using the TCP/IP telnet protocol. SMTP nodes are used for electronic mail networking with Internet hosts; if you are using Internet electronic mail, you should have a SMTP TCP/IP node.

4 Enter a timeout value, in minutes, for this node in the Timeout field.

This value tells NovaServer how many minutes of inactivity are tolerated before a user is disconnected from the server, freeing the node for another user. A timeout of zero indicates that users should never be disconnected for inactivity. For modem and TCP/IP nodes, the default timeout of five minutes is usually acceptable. For AppleTalk nodes, which are generally local users, you may want to extend it or even eliminate it entirely if you are using it in an environment (such as a corporate network) where you want to allow users to remain connected all day.

5 Click the node before which you wish the new node to appear.

For example, if you want the new node to be the first node on the list, click the existing first node. All existing nodes are shifted down the list when the new node is added. If you want the new node to appear last on the list, click the blank space after the last node.

6 Click the Add button to add the new node.

The new node is added and displayed in the Nodes window.

7 If you wish to add additional nodes, repeat steps 2-6 until all nodes have been added.

- 8 **Close the Configure Node Settings window by clicking its close box or by pressing ⌘W.**

An alert appears reminding you that you must quit and restart the server before new nodes will appear.

- 9 **Click OK or press Return to clear the alert.**

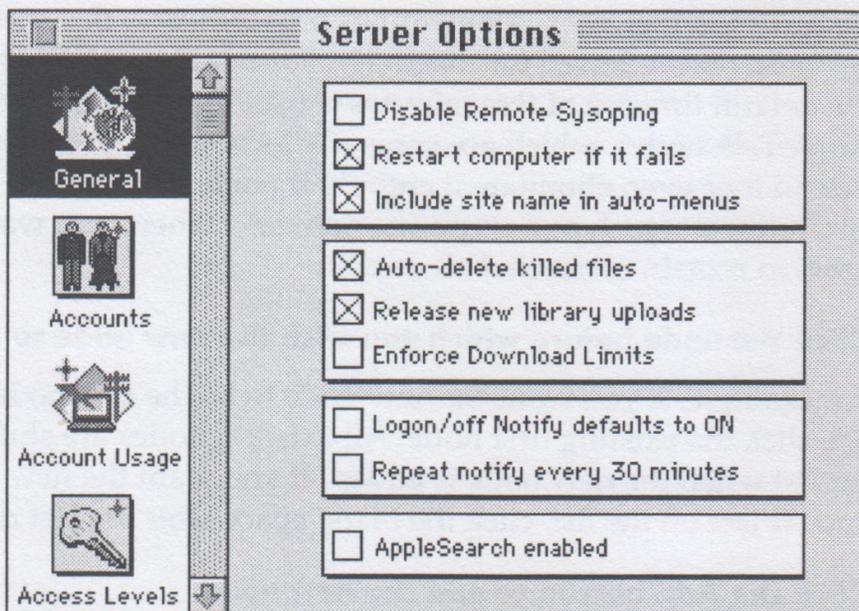
- 10 **Choose Quit from the File menu to exit NovaServer.**

NovaServer quits, and you are returned to the Finder.

- 11 **Re-launch NovaServer by double-clicking the NovaServer application to install your new nodes.**

To delete a node, click the node, then the Delete button. You may select a range of nodes for deletion by clicking the first node, then clicking the last node while holding down the Shift key. Additionally, holding down the Command (⌘) key while clicking a node toggles that node between selected and unselected. Clicking the Delete button deletes all selected nodes.

Options (⌘Y). Displays the Server Options window, shown below. The Server Options window has ten separate panels, which are selected by clicking an icon in the scrolling list on the left side of the window. The Server Options panel controls settings that affect the way the server as a whole (rather than just a particular component) operates. The ten available panels and the options accessible through them are:



Disable Remote Sysoping. If activated, prevents users from accessing remote sysop features even if they have proper access levels. See Chapter 9, "Remote Maintenance," for more details on these features.

Restart computer if it fails. If activated, restarts the computer whenever a System Error (bomb) or other serious problem occurs. See Chapter 8, "Maintaining and Managing Your Server," for more information on keeping your server up and running.

Include site name in auto-menus. If activated, places the site's name (which is embedded in your NS Key file) in automatically-generated text (TTY/VT100/ANSI) and RIP graphics.

Auto-delete killed files. If activated, causes NovaServer to automatically delete files from the server's hard drive when they are deleted from the library. Otherwise, NovaServer keeps the file on the drive, merely deleting its entry from the file library's listing.

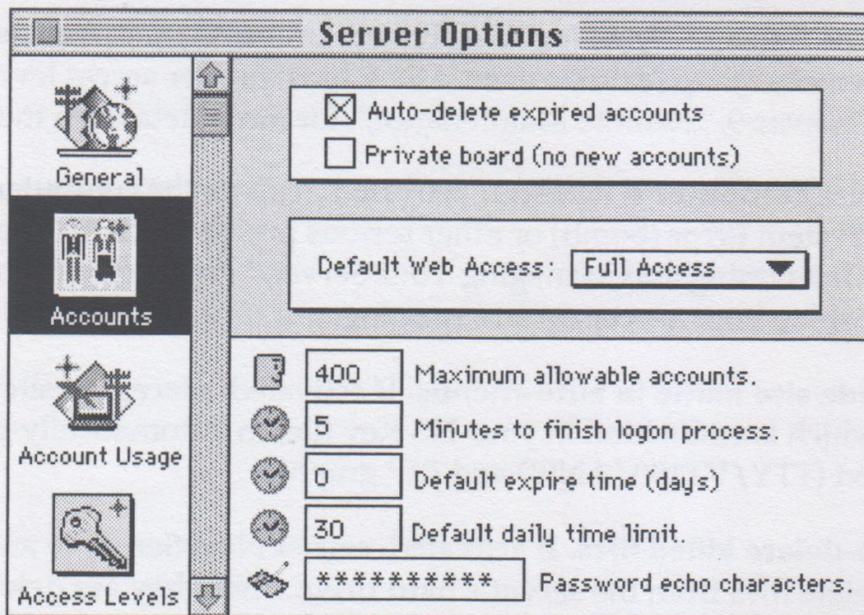
Release new library uploads. If activated, causes NovaServer to automatically release files that have been uploaded to all libraries on the server. Otherwise, a system operator or moderator must manually release files.

Enforce download limits. If activated, causes NovaServer to adhere to the download limits set in each individual file library component. Otherwise, NovaServer ignores all download limits.

Logon/off Notify defaults to On. Each user account has a setting that allows the caller to be notified whenever someone logs on or off the server. If this checkbox is activated, this feature is automatically activated when a new account is created. Otherwise, the feature is inactive on new accounts and must be manually activated.

Repeat notify every 30 minutes. NovaServer can notify users on a local area network when their mailbox receives new mail, even if they are not logged on to the server at the time. If this checkbox is activated, NovaServer repeats this notification every thirty minutes, as long as the user has new electronic mail waiting.

AppleSearch enabled. Activate this checkbox if you wish to use NovaServer with AppleSearch. Deactivate it if you wish to temporarily block access to AppleSearch for any reason (for example, maintenance). See Chapter 4, "Creating Your Server's Menu Structure," and Chapter 12, "Networking with the Internet," for more information on AppleSearch.



- *Account management is covered in more depth in Chapter 7, “Managing Your Accounts.”*

Auto-delete expired accounts. Automatically deletes accounts when they have expired. If this checkbox is deactivated, accounts are only marked as unverified, rather than deleted, when the account’s expiration date has been reached. You set an account’s default lifespan in the Default Expire Time field, below.

Private board (no new accounts). If this checkbox is activated, users may not create their own accounts—only the system operator can create new accounts. If it is not activated, users can create their own accounts by logging in with the account ID *New* and answering a few questions.

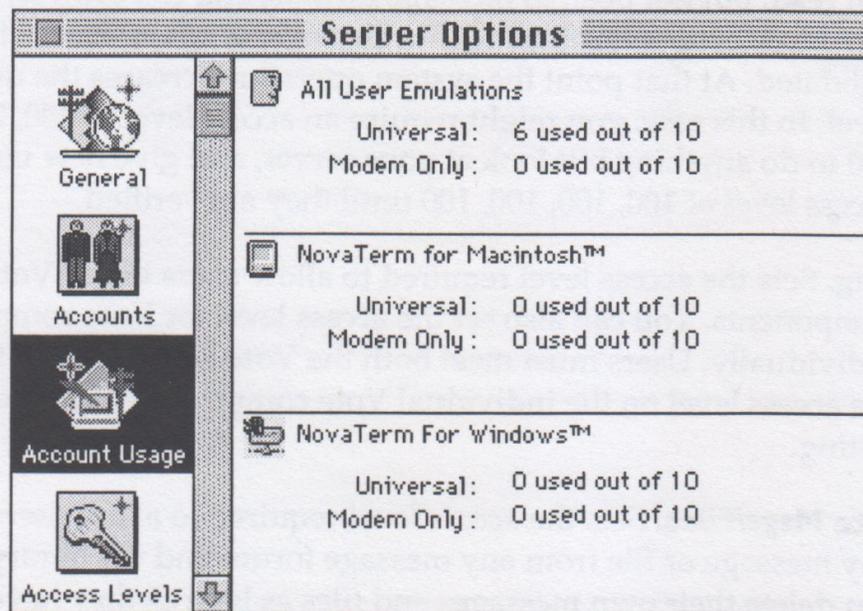
Default Web Access. Selects the initial Web access callers have when their account is first created, if you have licensed the Web Out option for your NovaServer. (You can later change this on an account-by-account basis.) You may allow users to visit any site (Full Access), no sites (None), all but the sites you have specifically blocked access to (Default Allow), or no sites but the ones you have specifically permitted access to (Default Deny). See Chapter 12, “Networking With The Internet,” for more details on creating a database of allowed or blocked Web sites.

Maximum allowable accounts. This number does not reflect the number of account licenses you have bought for NovaTerm callers; rather, it indicates the number of accounts NovaServer's account database is currently configured to hold. You should keep this number as small as possible—small databases are more efficient than large ones—and increase it only when necessary to support more new users.

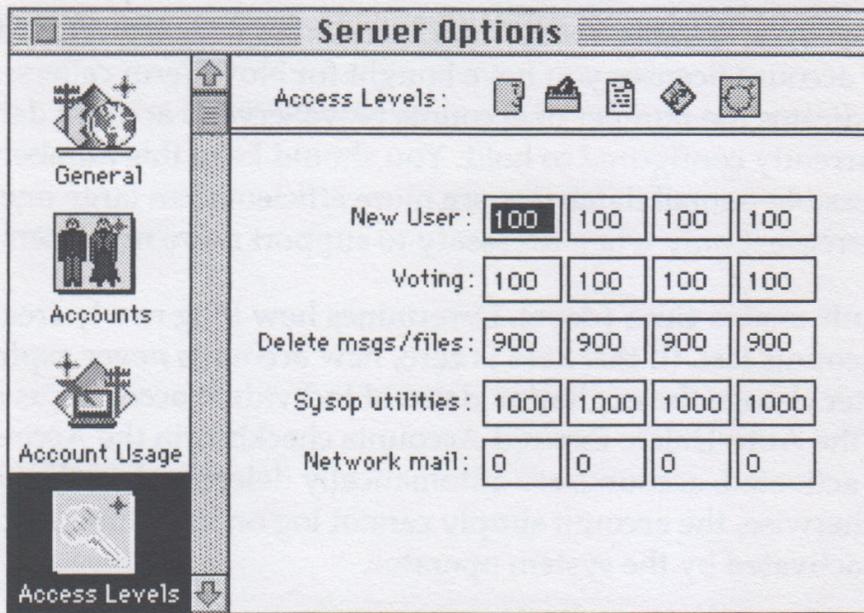
Default expire time (days). Determines how long newly created accounts last. (If this field is zero, new accounts never expire.) You can later change the expiration dates of individual accounts as necessary. If the Auto-Delete Expired Accounts checkbox in the Accounts panel is activated, accounts are automatically deleted when they expire; otherwise, the account simply cannot log on until their account is reactivated by the system operator.

Default daily time limit. Determines how many minutes per day a new user is permitted. You can later change this value on an account-by-account basis, as well as limiting accounts' allotted time per call.

Password echo characters. Determines the characters that are displayed when a text-mode (TTY/VT100/ANSI) user enters their password. (For security reasons, the actual password is not echoed back.)



The **Account Usage** panel shows the number of account licenses currently allocated to users of your server. (Your NovaServer license allows you to have a certain number of each type of user.) This panel is for information purposes only; none of the displayed information can be modified. For more information on account licensing, see Chapter 7, "Managing Your Accounts."



- See Chapter 4, "Creating Your Server's Menu Structure," and Chapter 7, "Managing Your Accounts," for more information on how access levels work.

New User. The access level given to a new user at account creation. This access level can later be changed on an account-by-account basis. Some system operators prefer to set up their server so that new users can read, but not post, to message forums, and can browse, but not download from or upload to, file libraries, until the account has been validated. At that point the system operator increases the user's access level. In this case, you might require an access level of 200, 200, 200, 200 to do anything but look at your server, and give new users an access level of 100, 100, 100, 100 until they are verified.

Voting. Sets the access level required to allow users to use Vote components. You can also set the access level for Vote components individually. Users must meet both the Vote access level set here, and the access level on the individual Vote component, to participate in voting.

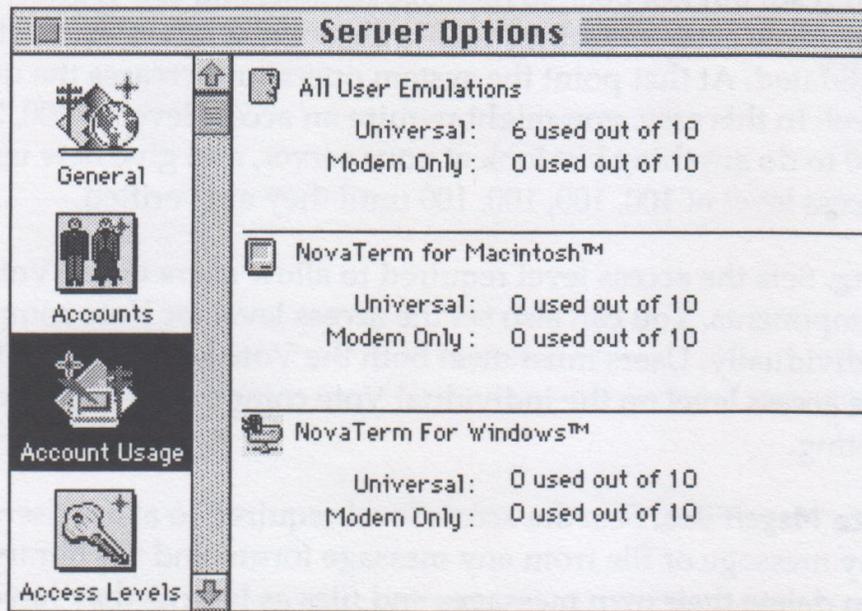
Delete Msgs/Files. Sets the access level required to allow users to delete any message or file from any message forum and file library. (Users can delete their own messages and files as long as they have posting privileges to the forum or library.) If you want to give a few users this power across your entire server, make sure they have at least this much access. To give users this power in only a few forums or libraries, use the Moderator Group field of the forum or library component instead.

Maximum allowable accounts. This number does not reflect the number of account licenses you have bought for NovaTerm callers; rather, it indicates the number of accounts NovaServer's account database is currently configured to hold. You should keep this number as small as possible—small databases are more efficient than large ones—and increase it only when necessary to support more new users.

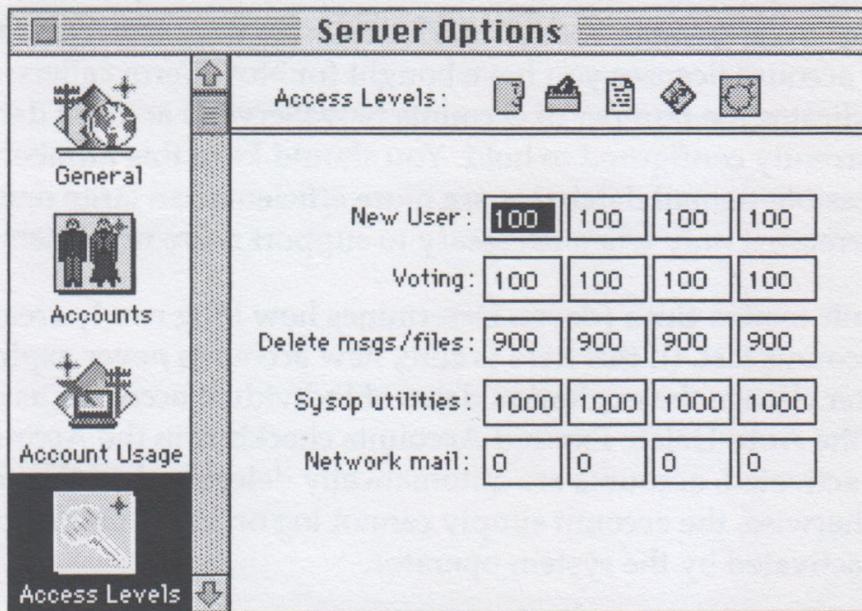
Default expire time (days). Determines how long newly created accounts last. (If this field is zero, new accounts never expire.) You can later change the expiration dates of individual accounts as necessary. If the Auto-Delete Expired Accounts checkbox in the Accounts panel is activated, accounts are automatically deleted when they expire; otherwise, the account simply cannot log on until their account is reactivated by the system operator.

Default daily time limit. Determines how many minutes per day a new user is permitted. You can later change this value on an account-by-account basis, as well as limiting accounts' allotted time per call.

Password echo characters. Determines the characters that are displayed when a text-mode (TTY/VT100/ANSI) user enters their password. (For security reasons, the actual password is not echoed back.)



The **Account Usage** panel shows the number of account licenses currently allocated to users of your server. (Your NovaServer license allows you to have a certain number of each type of user.) This panel is for information purposes only; none of the displayed information can be modified. For more information on account licensing, see Chapter 7, "Managing Your Accounts."



- See Chapter 4, "Creating Your Server's Menu Structure," and Chapter 7, "Managing Your Accounts," for more information on how access levels work.

New User. The access level given to a new user at account creation. This access level can later be changed on an account-by-account basis. Some system operators prefer to set up their server so that new users can read, but not post, to message forums, and can browse, but not download from or upload to, file libraries, until the account has been validated. At that point the system operator increases the user's access level. In this case, you might require an access level of 200, 200, 200, 200 to do anything but look at your server, and give new users an access level of 100, 100, 100, 100 until they are verified.

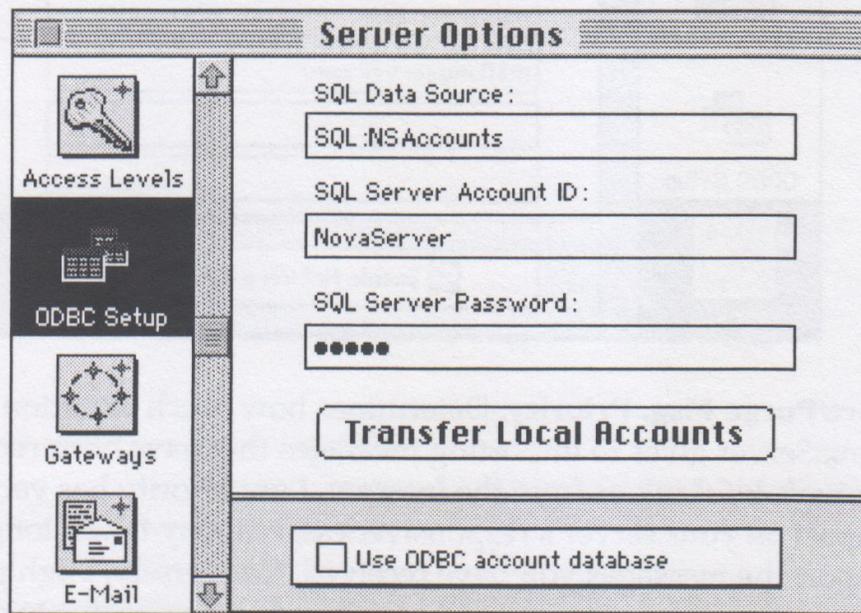
Voting. Sets the access level required to allow users to use Vote components. You can also set the access level for Vote components individually. Users must meet both the Vote access level set here, and the access level on the individual Vote component, to participate in voting.

Delete Msgs/Files. Sets the access level required to allow users to delete any message or file from any message forum and file library. (Users can delete their own messages and files as long as they have posting privileges to the forum or library.) If you want to give a few users this power across your entire server, make sure they have at least this much access. To give users this power in only a few forums or libraries, use the Moderator Group field of the forum or library component instead.

Sysop Utilities. Sets the access level required to perform highly privileged actions, such as editing the server remotely, releasing files, editing accounts, and so on. Make sure that only trusted users have this access level.

NovaTerm Client. Sets the access level required to use NovaTerm, the graphical user interface software for Macintosh and Windows, on this server. Note that the default configuration allows new users to use NovaTerm.

Network Mail. Sets the access level required to receive and send electronic mail to other servers and to Internet destinations, if your server is networked. The default configuration allows all users to use network mail; as with NovaTerm access, you may wish to increase the access level to allow only users who have made a donation to your server network mail access.



- *The items in the ODBC Setup panel relate to setting up an Open Data Base Connectivity account and log database. For further information on ODBC and account servers, please see Chapter 10, "Running a Virtual Server."*

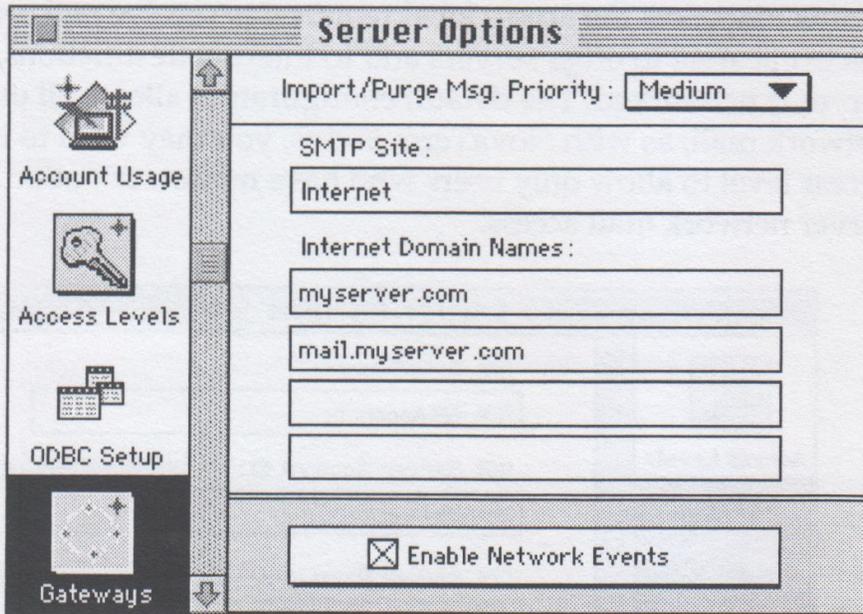
SQL Data Source. The name of the database file on the ODBC server that contains your account database.

SQL Server Account ID. The account ID on your ODBC server that you set up for use by NovaServer.

SQL Server Password. The password associated with the account ID above.

Transfer Local Accounts. Clicking Transfer Local Accounts copies any accounts in your NovaServer account database to the ODBC account database.

Use ODBC account database. Activate this checkbox to have NovaServer use an ODBC account database instead of its own built-in database. The SQL Data Source, SQL Server Account ID, and SQL Server Password must all be set correctly before you activate this checkbox.

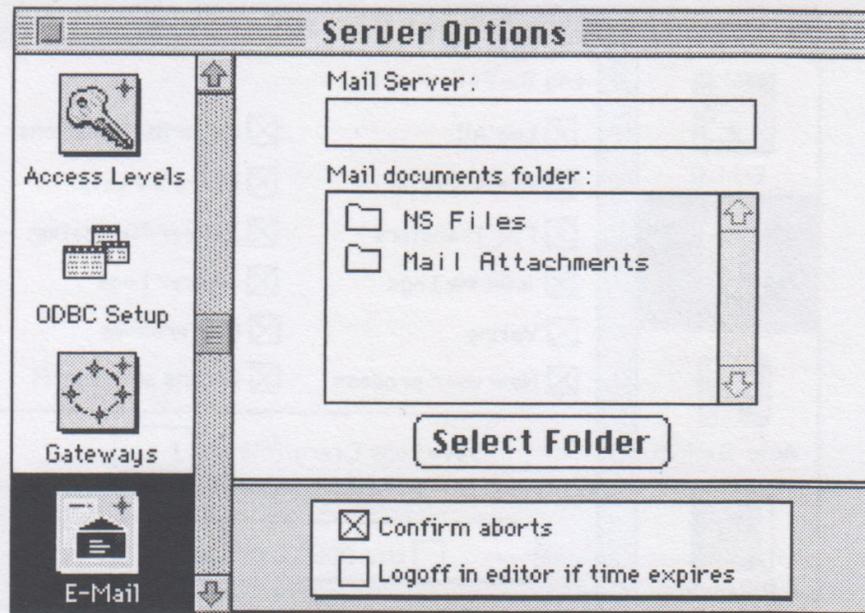


Import/Purge Msg. Priority. Determines how much attention NovaServer gives to importing messages that have been received through InfoLink or from the Internet. Low priority has very little impact on your server's responsiveness, but may take a long time to import the messages you have received. Conversely, High priority may make your server seem sluggish and unresponsive to callers but quickly moves the messages to where they belong.

SMTP Site. The name of the site that receives electronic mail destined for the Internet, usually Internet.

Internet Domain Names. The domain names for which your NovaServer accepts incoming Internet electronic mail. The first name in the list is the name that is placed on all electronic mail sent to the Internet.

Enable Network Events. If activated, allows scheduled network connections to run at the times specified in the List Events window (choose Events from the Setup menu). If deactivated, no network connections are run.

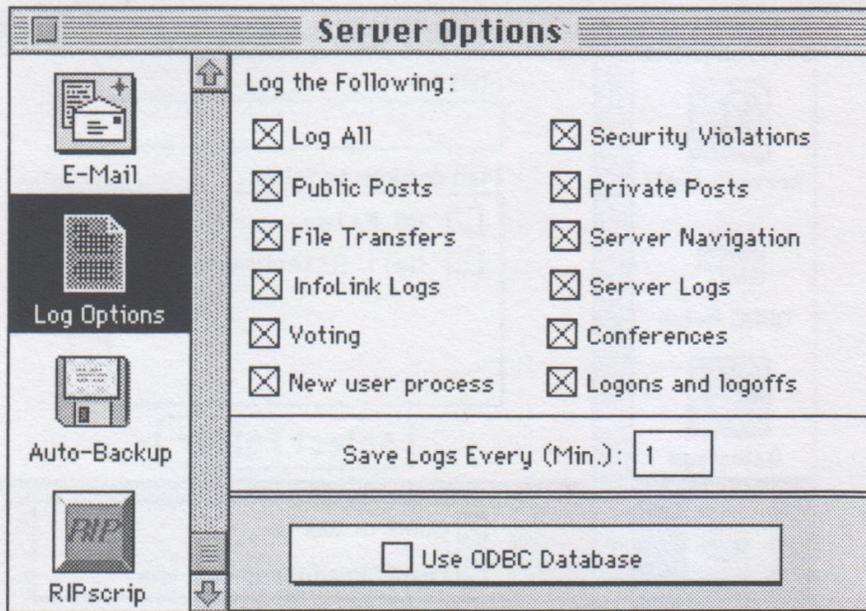


Mail Server. The name of the NovaServer that handles all the electronic mailboxes for this server. You may use the server's Internet domain name (if it has one) or its InfoLink site name. This field is used only in virtual server configurations; leave it blank if you are using a single-server setup or if you want each server to handle mail for its own accounts. See Chapter 10, "Running a Virtual Server," for more information.

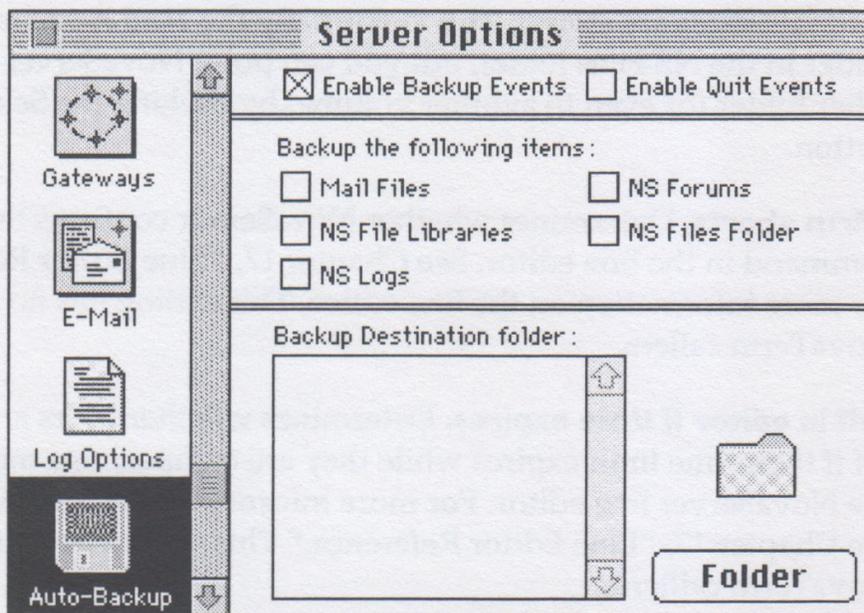
Mail documents folder. The folder where files attached to electronic mail messages are stored. This is normally the Mail Attachments folder in the NS Files folder, but you can point NovaServer to any other folder (or even to another volume) by clicking the Select Folder button.

Confirm aborts. Determines whether NovaServer confirms the Abort command in the line editor. See Chapter 17, "Line Editor Reference," for more information on the line editor. This setting has no effect on NovaTerm callers.

Logoff in editor if time expires. Determines whether users are logged off if their time limit expires while they are composing a message in the NovaServer line editor. For more information on the line editor, see Chapter 17, "Line Editor Reference." This setting has no effect on NovaTerm callers.



The checkboxes in the **Log Options** panel determine which types of information are logged. The Save Logs Every (Min.) field determines how frequently the log information is written to disk (the logs are stored in memory to speed server operation). See Chapter 8, “Maintaining and Managing Your Server,” for more information on the NovaServer logs. The Use ODBC Database checkbox causes your logs to be stored on your account server; see Chapter 10, “Running a Virtual Server,” for more information.



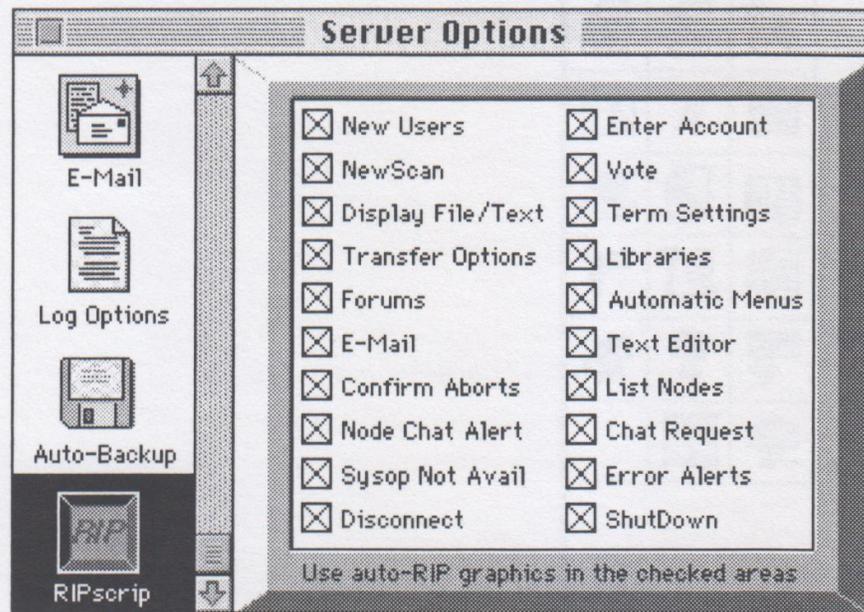
- For more information on NovaServer’s automated backup feature, see Chapter 8, “Maintaining and Managing Your Server.”

Enable Backup Events. If activated, allows backup events to occur according to the schedule set up in the List Events window (choose Events from the Setup window). If deactivated, all backup events are disabled.

Enable Quit Events. If activated, allows quit events to occur according to the schedule set up in the List Events window (choose Events from the Setup window). If deactivated, all quit events are disabled.

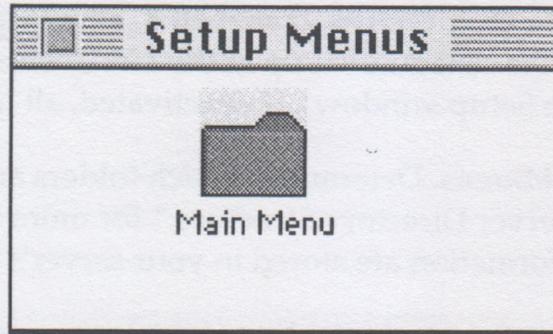
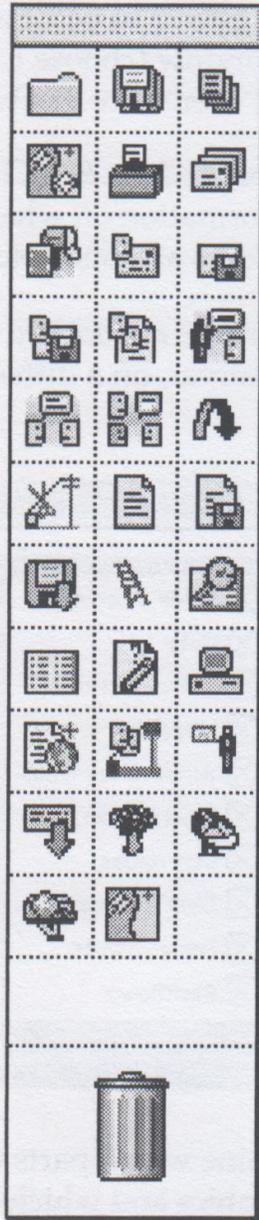
Checkboxes. Determines which folders are backed up. See Chapter 18, "Server Directory Structure," for more information on what kinds of information are stored in your server's folders and sub-folders.

Folder. Selects the folder to which server contents are backed up. This folder may be on the same volume as the server, on a different volume, or on a network file server.

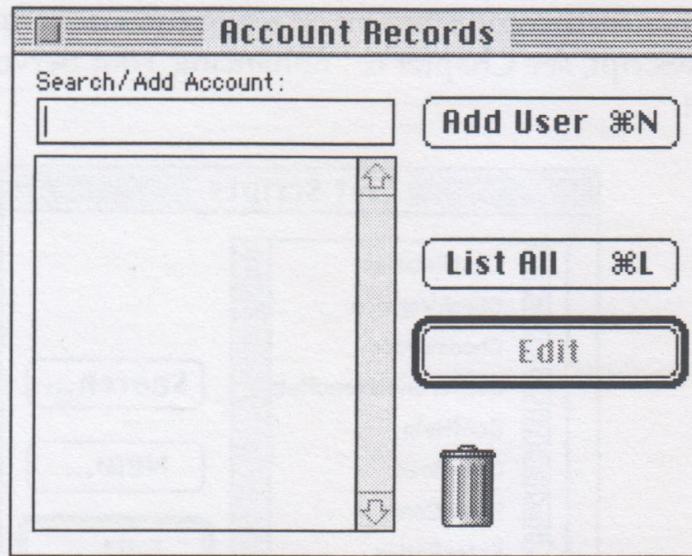


The checkboxes in the **RIPscrip** panel determine which parts of the server have automatically-generated RIP graphics and which have graphics generated by NovaScripts you write. If a checkbox for a particular section is activated, NovaServer uses the automatically-generated graphics and ignore the corresponding NovaScript.

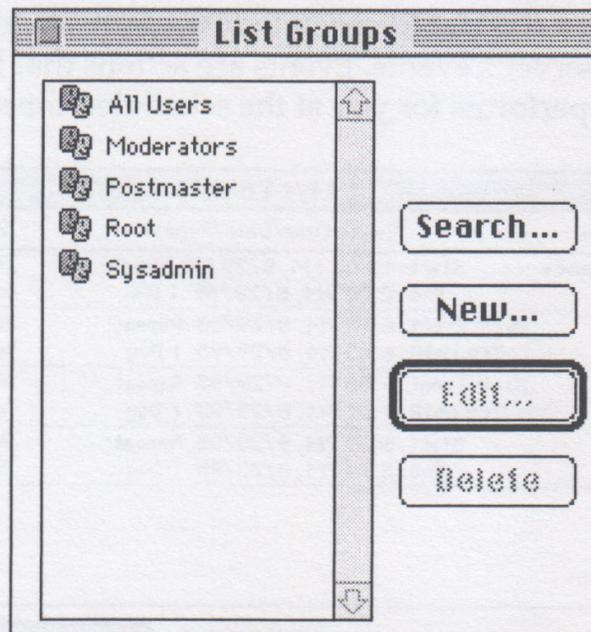
Menus (%M). Opens the NovaServer menu editor (below) where you build your server's structure by dragging server components into menu windows. See Chapter 4, "Creating Your Server's Menu Structure," for detailed instructions on using the menu editor.



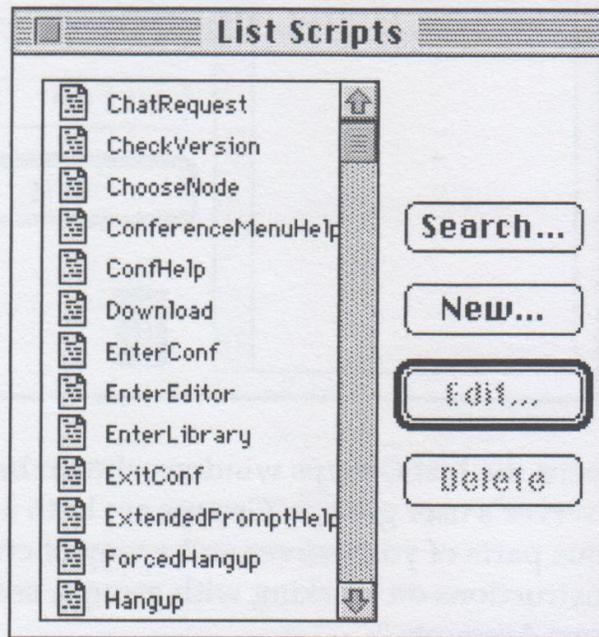
Accounts (%U). Opens the Account Records window, shown below, where you create, delete, and edit user accounts. For detailed instructions on managing user accounts, see Chapter 7, "Managing Your Accounts."



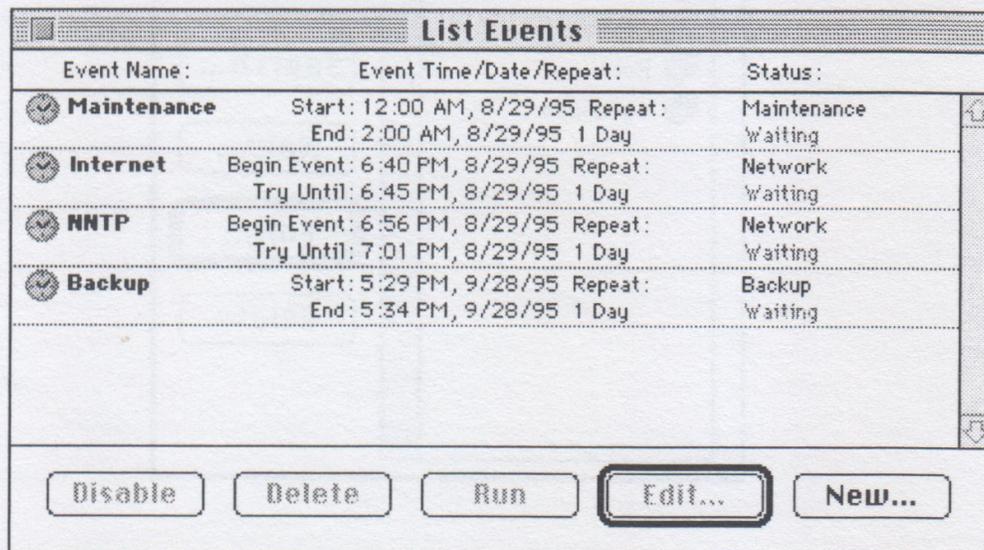
Groups (%G). Opens the List Groups window, shown below, where you manage your server's user groups. Groups are both a way of controlling access to various parts of your server and a way of creating mailing lists. For detailed instructions on working with groups, see Chapter 7, "Managing Your Accounts."



Scripts (%T). Opens the List Scripts window, shown below, where you can manage text resources and scripts written in the NovaScript language. Scripts allow you to change your server's user interface and to write small programs that respond differently according to user account attributes. For further information on using the List Scripts window and using NovaScript, see Chapter 6, "Enhancing Your Server with NovaScript."



Events (%E). Opens the List Events window, shown below, where you manage your server's events. Events are actions that NovaServer automatically performs for you at the scheduled time.



From the List Events window, you can perform the following actions:

- **Create a new event** by clicking the New button.
- **Delete an existing event** by clicking the event to be deleted, then clicking the Delete button. You are asked to confirm that you really want to delete the event before it is actually deleted.
- **Change an existing event** by clicking the event to be edited, then clicking the Edit button or pressing Return. You may also simply double-click the event to be edited.
- **Run an existing event right now** by clicking the event to be run, then clicking the Run button.
- **Disable or enable an event** by clicking the event to be enabled or disabled, then clicking the Enable button (if the event is currently disabled) or the Disable button (if the event is currently enabled). Disabled events are marked with an Event Disabled message in the Status column. The Disable and Enable buttons give you the ability to disable and enable individual events; to enable or disable whole classes of events, see the Network and Backup panels of the Server Options window (choose Options from the Setup menu). To disable all network events for a particular site, disable the Edit Sites window's Allow Connections checkbox.

All event types have two date and time fields, which have different meanings depending on the type of event selected. Times are entered in 24-hour (military or European) format; 23:00 represents 11:00 PM, and 0:00 represents midnight.

Events can be set to repeat by entering an appropriate interval and selecting a unit of time (minutes, hours, days, or weeks) from the pop-up menu to the right of the Repeat field. Entering an interval of zero indicates that the event is not to be repeated. NovaServer automatically deletes non-repeating events after they have been performed.

Available event types include:

- **Network.** A connection to another site is initiated at the indicated time. For further information on Network events, see Chapter 11, "Networking with InfoLink," Chapter 12, "Networking with the Internet," and Chapter 13, "Networking with Other Gateways."

Network events have a **Begin Event** and **Try Until** date and time, which indicate the time at which NovaServer first attempts a connection, and the time at which NovaServer ceases trying to connect to the remote site. Once a connection is obtained, no further attempts are made until the event is repeated.

- **Maintenance.** NovaServer devotes the bulk of its processing power to system maintenance tasks (such as deleting old messages and importing new ones) during the specified time period. (Maintenance actually occurs throughout the day, in the background, but on all but the simplest configurations, this background maintenance isn't enough to keep up with the server's activity.) See Chapter 8, "Maintaining and Managing Your Server," for more information on maintenance events.

Maintenance events have a **Begin At** and **End At** date and time, which indicate the times between which NovaServer devotes most of its processing power to maintenance tasks. We suggest scheduling at least a two-hour block of time that does not overlap any other events for maintenance.

- **External.** NovaServer runs an external (a small program designed to run inside NovaServer) at the specified time. Externals should be installed in the NS Externals folder. Instructions for writing your own externals are included as part of a full NovaServer installation.

External events have a **Launch At** and **End At** date and time, which indicate the time at which the specified external is run, and the time at which it is forcibly terminated if it has not already finished execution.

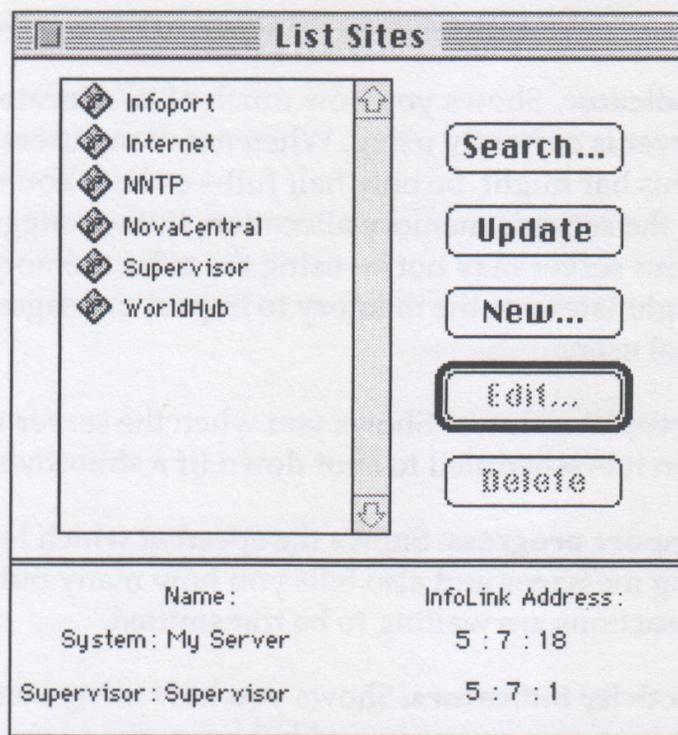
- **Backup.** NovaServer's automatic backup feature (which can be set up in the Auto-Backup panel of the Server Options window—choose Options from the Setup menu) is activated at the specified time. See Chapter 8, "Maintaining and Managing Your Server," for more information on backup events.

Backup events have a **Warn Nodes At** and a **Backup At** date and time, which indicate the time at which connected users are notified of the impending backup and the time at which the backup actually begins. We recommend that you do not schedule any other events that overlap with your backup events.

- **Quit.** The NovaServer application quits at the specified time. You can use a quit event in conjunction with an external backup program, such as Dantz's Retrospect,TM to set up automated backup of the server to tape or other storage media, since the backup cannot proceed while NovaServer is running.

Quit events have a Warn Nodes At and a Quit At date and time, which indicate the time at which connected users are notified of the impending shutdown of the NovaServer application and the time at which the server application actually quits.

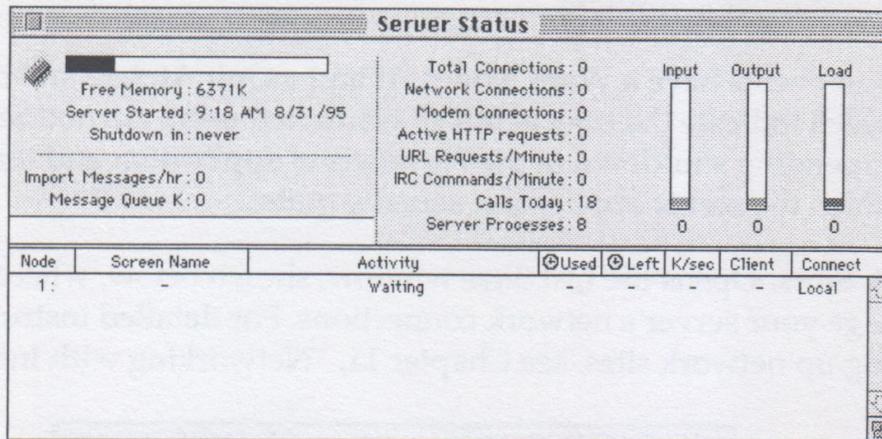
Network Sites. Opens the List Sites window, shown below, where you manage your server's network connections. For detailed instructions on setting up network sites, see Chapter 11, "Networking with InfoLink."



Lock Setup. Locks the Setup menu with a password so that it cannot be changed by unauthorized users. This provides moderate protection from individuals fiddling with the server, either purposely or inadvertently. Choosing Lock Setup causes NovaServer to prompt you twice for a password (the second time is for verification). When the Setup menu is locked, the only active item on the menu is Unlock Setup. You must choose Unlock Setup and re-enter the password before you can select any other item on the Setup menu.

THE WINDOWS MENU

Status (%S). Displays the NovaServer Status window, shown below.



Memory indicator. Shows you how much of its allocated memory your NovaServer is currently using. When not many users are using the server, this bar might be only half full—or less. You may be tempted to lower the server's memory allocation, but we suggest that you don't. Your server may not be using the extra memory at the moment, but it might later use the memory to import messages or to support additional users.

Server startup/shutdown. Shows you when the server was last started and when it is scheduled to shut down (if a shutdown is pending).

Message import progress. Shows the speed at which NovaServer is importing messages and also tells you how many outgoing messages and transactions are waiting to be transmitted.

Network activity indicators. Shows you how many connections of various types your server is, and has been, processing.

- **Total connections.** Number of users connected right now
- **Network connections.** Number of users connected by AppleTalk or TCP/IP
- **Modem connections.** Number of users connected to serial nodes
- **Active HTTP requests.** How many requests for menus, messages, and other resources the server is currently in the process of filling
- **URL requests/Minute.** How many requests per minute, on average, the server is filling at the moment

- **IRC Commands/Minute.** How many chat messages per minute, on average, the server is handling at the moment
- **Calls today.** Number of calls received today
- **Server processes.** Number of background processes (message import, backup, maintenance, and so forth) in progress

Load indicators. Shows you how much of the server's processing power is currently being used for input, output, and other processing. If the bar remains more than two-thirds full for more than a second or two at a time, the server may seem sluggish and unresponsive to users; at this point, you may want to upgrade your server hardware, spread your user load across two or more servers, reduce the priority of importing messages, or reschedule maintenance or backup events.

Node status list. Each node has its own line in the Status window consisting of a status message and an activity indicator. The activity indicator lets you know, at a glance, which of your users is using the most server processing power. (Downloads take a good deal of processing power, and user utilities like NewsScan can also be very intensive.) The columns in the status list tell you:

- **Node.** The node number
- **Screen name.** The screen name or handle of the user connected to the node
- **Activity.** What the user is doing or what menu they are viewing
- **Time Used.** How long the user has been online this session
- **Time Left.** How long the user can remain connected (• denotes no limit)
- **K/sec.** Data transfer rate through the node
- **Client.** What client software is being used on the node (Mac and Win indicate the Macintosh and Windows versions of NovaTerm)
- **Connect.** The node's connection type (Local, Serial, TCP/IP, AppleTalk)

Node numbers (§ 1-9 for first 9 nodes). The fixed nodes assigned to your server are listed on the Windows menu. (Nodes being used by NovaTerm network callers are not listed.) Selecting a node from this menu opens the terminal window associated with that node, or brings it to the front if it is already open. If the node is not being used by a caller, a status message appears in the window; otherwise, the window shows what the caller is doing. Once the terminal window has been opened, you see what the caller sees, and what you type is accepted by the server as if the caller had typed it himself. Additionally, you may use the options on the Terminal menu to perform a variety of node-related functions.

- *To improve server performance, keep node windows closed unless you are actually monitoring the node.*

.....
NOVASCRIPT REFERENCE

- *This chapter serves as a reference to the NovaScript programming language.*

NOVASCRIPT BASICS

NovaScript is a powerful, English-like interpreted scripting language built into NovaServer that allows you to display text and graphics with almost unlimited flexibility. If you know even a little HyperTalk, the scripting language used in HyperCard,TM you should find NovaScript very easy to learn. (If you don't know any HyperTalk, don't worry—NovaScript is still easy.)

Before you dive into this chapter, be sure you have read Chapter 5, "NovaScript and Custom Menu Design," and Chapter 6, "Enhancing Your Server With NovaScript," for an introduction to the things you might want to do with NovaScript.

NovaScript's single most frequently used facility is the display of formatted text on the caller's screen. To make this simpler, NovaScript actually has no statement for displaying text on the screen; instead, all NovaScript commands are prefaced with a bullet (•) character, generated by pressing Option-8. Any text that does *not* begin with a bullet is displayed on the caller's screen. The text does not need to be entered with carriage returns after each line; NovaScript automatically formats the text to fit the caller's screen width.

NovaScript commands are case-insensitive—upper and lower-case make no difference to the interpretation of the command. Similarly, extra spaces (in addition to the ones required to separate commands from the other information they require) are also permitted and ignored by NovaScript. In fact, in most cases NovaScript is even lenient about spacing *inside* commands. The `request URL` command, for example, could also be written without the space, as `requestURL`.

You can add comments to your scripts by placing them at the end of a command line, prefaced by two hyphens (--). You might want to add comments to explain to someone else (or even yourself) what you were thinking when you wrote a particular script, the last date you changed it, and other information. An instruction that contains a comment might look like this:

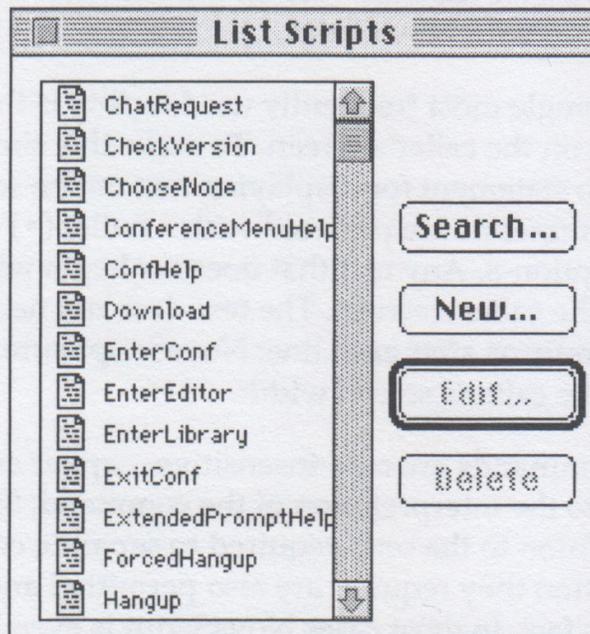
- `if ask "Delete file?" -- confirm deletion`

You can write lines that only contain comments this way:

- `-- Written by Annette Surfer, 10/11/94`

STORING SCRIPTS

There are two places you can store NovaScript scripts. First, every Menu component you add to the server has an attached NovaScript that determines how that menu is presented to the user. (See Chapter 5, "NovaScript and Custom Menu Design," for a cookbook-style approach to designing menu scripts.) Second, there's a *script vault* that stores miscellaneous scripts and text resources used by various parts of NovaServer. This vault, shown below, is the List Scripts window, and can be displayed by choosing Scripts from the Setup menu.



When the List Scripts window is frontmost, you can perform the following actions:

- **Open an existing script** to view or edit it by clicking the script name, then clicking Edit. (You may also double-click the script name.)
- **Delete an existing script** by clicking the script name, then clicking Delete. You should not delete scripts that are required by the server; if you do, callers see a message indicating that the script does not exist whenever they use a part of the server that requires the script.
- **Create a new script** by clicking New, then entering the name to be given to the new script. An empty editing window appears.
- **Find a particular script** by clicking Search and entering part or all of the desired script's name in the dialog that appears, then pressing Return. The first script whose name contains the text you entered is highlighted. You may bring the Search Window back to the front and click Find Next to find the next occurrence, if any, of the partial name you entered.

RUNNING SCRIPTS

You can cause the scripts you create through the List Scripts window to be executed (performed) by NovaServer in several different ways:

- **Give the script a name** that causes NovaServer to execute it automatically when a particular part of the server's user interface needs to be displayed. (A list of these special names appears at the end of this chapter.)
- **Add a Run Script component** that executes the script. (See Chapter 4, "Creating Your Server's Menu Structure," for more information on the Run Script component.)
- **Access the script by URL** from an HTML file or a Get URL server component, using the URL `interact://*/script/ScriptName`. (See Chapter 16, "HTML Reference," and Chapter 4, "Creating Your Server's Menu Structure," for more information on HTML documents and Get URL server components.)
- **Call the script from another script** with a `run script` or `requestURL` statement. (These statements are explained later in this chapter.)

Scripts may end in one of three ways. First, when the end of the script is reached, it automatically ceases execution. Second, the `exit` statement ends execution of the script even if the end of the script has not been reached. And finally, the `return` statement can be used to end a script and return a value to the calling script (when the script has been called as a function).

NUMBERS

NovaScript supports integers in the range -32,767 to 32,768. Numbers with decimal points are not permitted.

NovaScript also allows you to enter values in date and time format and in access level format. Dates and times are written in the following format:

```
.month.day.year:hour:minute:second
```

Hours must be in 24-hour (military or European) format. For example, `.4.30.97:14:30:12` refers to April 30, 1997 at 2:30:12 PM. You may also specify the date only or the time only, in the following formats:

```
.month.day.year  
:hour:minute:second
```

You may also omit the last field (or the last two fields) of the date or time. `:16:30` refers to 4:30 PM; `.2.18` refers to January 18 of the current year. `:2` refers to 2:00 AM; `.5` refers to May of the current year. NovaServer automatically fills in the current date or time for the missing fields. When tested for equality with the variable `now` (see "Variables" later in this chapter) the unspecified fields *always* match.

For example, if the time is 18:30:54, and the statement `if now is :18` is encountered, the value `:18` is converted to the time value 18:30:54 by retrieving the missing fields from the current time. As a result, the statement is true during the entire 6:00 PM hour. On the other hand, `if now is :18:00` is true for only one minute per day, and `if now is :18:00:00` is true for only one second per day.

For similar reasons, the statement `if now > :18` is true only at 7:00 PM and later, because when the time is (say) 18:59:59, the statement is really asking `if :18:59:59 > :18:59:59`, which is false. If you want the statement to be true any time after 6:00 PM, use a statement like `if now > :18:00:00`, fully specifying the minutes and seconds, instead—or else use `>=` instead of `>` so that the statement is true if the current time is equal to or greater than the time you specified.

In addition to dates and times, NovaServer also lets you specify access levels in the following format:

```
{level, level, level, level}
```

When writing comparisons with access levels, the entire comparison is true if and only if the same comparison of each number in the first access level to its corresponding number in the second access level is true.

CONSTANTS

For convenience, NovaScript supports the following constants that can be used in your scripts in place of the numbers they represent for readability.

Constant	Value
<code>false</code>	0
<code>true</code>	1
<code>tty</code>	0
<code>vt100</code>	1
<code>ansi</code>	2
<code>novaterm</code>	3
<code>ripscrip</code>	4

For example, it is considerably more human-readable to write a script that says `if client is novaterm` than to write one that says `if client is 3`, even though NovaScript interprets the command exactly the same way in both cases.

VARIABLES

In traditional programming languages, variables are places you store information you want to record for later use by the program. In NovaScript, however, you cannot change variables. The values of variables are set by NovaServer itself, and you can check these variables to determine the access level, client software, and other things about the caller and the environment the script is operating under. Then your script can display different information based on the content of these variables.

The variables include:

Variable	Type	Contents
access	<i>access</i>	Account's access levels
accinfo	<i>text</i>	Account's complete record including name and address
area	<i>text</i>	Name of the account's current location on the server
calls	<i>number</i>	Number of calls an account has made to the server
callstoday	<i>number</i>	Number of calls the server has received today
chat	<i>number</i>	1 if Chat Available is checked in the Terminal menu; otherwise 0
city	<i>text</i>	Account's location
computer	<i>text</i>	Account's computer type
downloads	<i>number</i>	Number of file downloads a user has made
firstname	<i>text</i>	Account's first name
handle	<i>text</i>	Account's screen name or account ID
lastcall	<i>date/time</i>	Date and time the user last called; zero if this is their first call
lastsave	<i>date/time</i>	Date and time the script was last saved
lastname	<i>text</i>	Account's last name
mailsent	<i>number</i>	Number of letters an account has sent
name	<i>text</i>	Account's complete name
node	<i>number</i>	Number of the node a caller is running on
now	<i>date/time</i>	Current date and time
posts	<i>number</i>	Number of public messages an account has posted

sysop	<i>number</i>	1 if caller has sysop privileges; otherwise 0
client	<i>number</i>	Caller's terminal type: 0=TTY, 1=VT100, 2=ANSI, 3=NovaTerm, 4=RIP
termversion	<i>number</i>	NovaTerm version number expressed as a large number
timeleft	<i>number</i>	Time left to the caller today (in minutes)
timelimit	<i>number</i>	User's daily time limit in minutes; 0 if no limit
totalcalls	<i>number</i>	Total number of calls server has received
uploads	<i>number</i>	Number of file library uploads an account has made
user	<i>number</i>	Account number of the current user
verified	<i>number</i>	1 if the caller is verified; otherwise 0

EXPRESSIONS

Expressions are the way you do math and comparisons in NovaScript. The basic operators are shown on the next page.

NovaScript evaluates all expressions to a single result using the order of operations above. All operations in parentheses are evaluated first. If sets of parentheses are nested, the innermost set is evaluated first. Then all arithmetic and logical negations are performed, followed by multiplication, division, and modulus, and so forth. Operations at the same level of precedence are performed left-to-right.

Boolean operations (comparisons and logical and/or operations) are also included in this process. All Boolean operations result in zero if the statement is false, or one if the statement is true. NovaScript makes no real distinction between Boolean expressions, including comparisons, and numeric statements. (This is much like the way BASIC and many other languages handle Boolean algebra.)

Order	Operator	Type of operator
1	()	Precedence (grouping)
2	-	Arithmetic negation
	not	Boolean Not; returns 0 if value is nonzero, otherwise 1
3	*	Multiplication
	/	Division
	mod	Modulo (remainder)
4	+	Addition
	-	Subtraction
5	>	Greater than
	<	Less than
	>=	Greater than or equal to
	<=	Less than or equal to
	≥	Greater than or equal to (Option-Period)
	£	Less than or equal to (Option-Comma)
6	is	Equal to
	=	Equal to
	!=	Not equal to
	<>	Not equal to
	π	Not equal (Option-Equals)
7	and	Boolean And; 1 if and only if both values are true; otherwise 0
8	or	Boolean Or; 0 if and only if both values are false; otherwise 1

BUILT-IN FUNCTIONS

NovaScript also has the following built-in functions that return values. These functions can be used in `if` and `repeat while` statements.

ask "*Question*" Displays the question, then returns 1 if the user responded with Y for Yes, or 0 if the user responded with N for No.

memberOf "*Group*" Returns 1 if account is a member of the specified group; otherwise returns 0

CONDITIONAL EXECUTION

You can use the `if`, `else`, and `end if` statements to perform only certain parts of scripts based on the value of certain variables or expressions. Only numeric, date/time, and access level comparisons can be made. Text variables cannot be used in `if` statements.

Here is the basic format of an `if` statement:

- `if` expression
 .
 . *{statements to be executed if expression is true}*
 .
• `end if`

In the above construction, no action is taken if the expression is false. You may also use the optional `else` statement to specify an action to be taken if the expression is false, as shown below:

- `if` expression
 .
 . *{statements to be executed and/or text to be displayed if expression is true}*
 .
• `else`
 .
 . *{statements to be executed and/or text to be displayed if expression is false}*
 .
• `end if`

In the `if` statement, you may use any expression that evaluates to a 1 or a 0. NovaServer treats a value of 1 as true and a value of 0 as false. (Actually, NovaServer treats any non-zero value as true.) Since expressions can contain Boolean comparisons as well as `and/or` statements, any of the statements on the next page are valid.

- if now < :1:00:00
- if node = 5
- if term is NovaTerm
- if access ≥ {100,100,100,100}
- if calls = 1 and client is NovaTerm
- if user is 1
- if memberOf "Moderators"
- if sysop

In the last example, the variable `sysop` always contains a 0 or a 1, so it is not necessary to write `if sysop is true`. (That would work, but it would also be redundant.) Similarly, in the next-to-last example, the `memberOf` function always returns a 0 or 1. Here are some more examples, all legal:

- if ask "Would you like to continue?"
- if sysop or memberOf "Moderators"
- if totalcalls = 1000
- if not sysop and not memberOf "Moderators"
- if not (sysop or memberOf "Moderators")

The last two examples are equivalent.

Conditional statements can be nested—that is, `if` statements can be placed inside each other. Consider the example below:

- if client is NovaTerm
 - if sysop or memberOf "Moderators"
 - requestURL "http://*/file/sysopNews.html"
 - else
 - requestURL "http://*/file/userNews.html"
 - end if
- else
 - if sysop or memberOf "Moderators"
 - printFile "sysopNews.text"
 - else
 - printFile "userNews.text"
 - end if
- request return
- end if

In the example above, the outermost `if` statement is used to determine whether the user is calling with NovaTerm or with some other terminal software. If they are using NovaTerm, an HTML version of the appropriate news file is displayed. If they are using some other terminal software, a text version is displayed instead. The two innermost `if` statements determine whether the user sees the system operator news or the general user news.

By the way, we have indented the script statements here to make them easier to read. Since NovaScript ignores extraneous spaces, this is legal—not to mention a good way to illustrate the structure of your script. You don't, however, *have* to format your scripts this way. NovaScript keeps track of your nested `if` statements even if you don't indent them.

LOOPS

You can have NovaServer repeat a series of instructions either a set number of times, or only as long as a particular condition is met. To repeat instructions a set number of times, use a construction like the one below. In this form of the repeat instruction, the expression is evaluated only once, and the statements inside the loop are repeated that number of times.

- `repeat expression`
 - `. {statements to be executed and/or text`
 - `. to be displayed repeatedly}`
- `end repeat`

The example below asks a user to enter their favorite ice cream flavors and stores the results in a text file called Ice Cream.

```
Please enter your 31 favorite flavors of ice cream.
```

```
openTextFile "Ice Cream"
```

```
First flavor?
```

- `input string`
- `repeat 30`

```
Next flavor please?
```

- `input string`
- `end repeat`

To repeat a series of instructions while an expression is true, use the construction below. The expression is evaluated just before each iteration of the loop; if the expression is found to be true, the loop is executed again. If the expression is not true at the beginning of the loop's

- `repeat while expression`
 - `{statements to be executed and/or text`
 - `to be displayed while expression is true}`
- `end repeat`

The example below continues asking the user for their favorite flavor of ice cream until the user indicates that they have no more favorite flavors.

Please enter your favorite flavors of ice cream.

- `openTextFile "Ice Cream"`
- First flavor?
- `input string`
 - `repeat while ask "Do you have another flavor?"`
- Next flavor please?
- `input string`
 - `end repeat`

The `next repeat` instruction tells NovaScript to skip the rest of the instructions inside the repeat loop and begin again at the top (if there are any more iterations to be performed). The `exit repeat` instruction tells NovaScript to end the repeat loop right now (even if there are more iterations to be performed) and continue with the instructions after the `end repeat`. Both instructions are usually used with `if` statements to terminate loops early or to execute certain instructions in the loop only under certain circumstances. You can usually write equivalent code using a long `if` statement in place of `exit repeat`, but using `exit repeat` can help your code be more readable than a series of nested `if` statements.

The example on the next page asks users to enter their favorite flavor of ice cream. After each flavor, they are asked whether they have a favorite topping that goes with that flavor. If they do not, the `next repeat` statement is used to send them back to the top of the loop to get their next flavor. (Notice that since we are asking for two pieces of information, we write a bit of identifying text to the survey file before each `input string` statement so that we can identify what each response indicates.)

Please enter your favorite flavors of ice cream.

- `openTextFile "Ice Cream"`

First flavor?

- `write "Ice Cream:"`
- `input string`
- `if ask "Do you like a topping on this flavor?"`

What kind of topping?

- `write "Topping:"`
- `input string`
- `end if`
- `repeat while ask "Do you have another flavor?"`

Next flavor please?

- `write "Ice Cream:"`
- `input string`
- `if not ask "Do you like a topping on this flavor?"`
- `next repeat -- go back to top of loop if no topping`
- `end if`

What kind of topping?

- `write "Topping:"`
- `input string`
- `end repeat`

The example below uses `exit repeat` to determine whether the loop should end. In our previous ice-cream survey examples, we had to ask our question once before we even got into the loop, so that the user would not be asked whether they had *another* flavor before they had entered the first one. (This got a little ridiculous in the example above!) This example solves this problem:

- `openTextFile "Ice Cream"`
- `repeat while true -- repeat indefinitely`

What flavor of ice cream do you like?

- `input string`
- `if not ask "Do you have another favorite flavor?"`
- `exit repeat`
- `end if`
- `end repeat`

By the way, it is possible to write our example script so that the user is asked what topping they like for each flavor (if they express a topping interest) *and* so that the questions do not need to be asked twice. Can you do it? You need to use `exit repeat` but *not* `next repeat`. Here's one solution.

- openTextFile "Ice Cream"
- repeat while true

What flavor of ice cream do you like?

- write "Ice Cream:"
- input string
- if ask "Do you like a topping on this flavor?"

What kind of topping?

- write "Topping:"
- input string
- end if
- if not ask "Do you have another favorite flavor?"
- exit repeat
- end if
- end repeat

CALLING OTHER SCRIPTS

NovaScript lets you call other scripts and externals in several ways. First, the `run script` command allows you to execute any other script as if it were a part of the current script. For example, the statement below runs the `DisplayHeader` script. The current script is put on hold until `DisplayHeader` exits.

- `run script "DisplayHeader"`

With NovaTerm users, you may also run a script with the `requestURL` statement. The following statement opens a new terminal window (if one is not already open) and runs the `DisplayHeader` script. The current script is put on hold until `DisplayHeader` exits.

- `requestURL "interact://*/script/DisplayHeader"`

Secondly, you can call another script as a function—for example, in an `if` statement. The script should be ended with a `return` statement that indicates the value to be returned. For example, the script below calls a simple script called `ConfirmDownload` to confirm the download of a copy of `StuffIt Expander` to the user.

Would you like to receive a copy of `StuffIt Expander`?

- `if confirmDownload()`
- `download file ":NS Files:Utilities:Expander.sea"`
- `end if`

Here is the `confirmDownload` script, which uses the `return` statement to define the value which the script returns to the calling program. (Scripts which are called as functions cannot contain spaces in their name.)

```
• if ask "Download this file?"
• return 1
• else
Download canceled.
• return 0
• end if
```

If the `exit` statement is used to end a script, or if a script ends normally, it returns a value of zero.

CALLING EXTERNALS

Externals, small add-on programs that run as part of NovaServer and are stored inside the NS Externals folder, can also be called in ways analogous to scripts. The `launch external` command is used to call externals as shown below. The name used in the `launch external` statement is the name of the external as stored in the NS Externals folder.

```
• launch external "Count Files"
```

Externals can also be called as functions. As with scripts, externals called as functions cannot have spaces in their name. Many externals accept one or more parameters, which can be passed either in or out of parentheses, as shown below.

```
• if compress("Digest",3)
Compression successful!
• download file "Digest"
• end if
```

```
• if compress "Digest" 3
Compression successful!
• download file "Digest"
• end if
```

More information about writing your own externals is installed with the full NovaServer installation.

ACCOUNT & GROUP COMMANDS

delete account Deletes the current account.

put user in group "*group name*" Adds the user to the specified group.

remove user from group "*group name*" Removes the user from the specified group.

SESSION COMMANDS

disable aborts Disables the user's ability to abort the script by pressing Control-C. The default behavior (when a script begins running) is to allow aborts.

enable aborts Enables the user's ability to abort the script by pressing Control-C. The default behavior (when a script begins running) is to allow aborts.

toggle word wrap Toggles NovaScript's automatic word wrap feature, which formats blocks of text to fit the user's terminal, on or off. If word wrap is on, it is turned off; if it is off, it is turned on.

disconnect Disconnects the user's session and signs them off the server.

pause for *sixtieths* Temporarily halts the execution of the script until the specified time period has passed. Time is specified in sixtieths of a second.

USER INTERACTION COMMANDS

display "*text*" *variable* "*text*" *variable*... Displays the given information to the user. A carriage return is *not* added at the end of the statement. The text components and variables can be mixed in any combination, for example:

- display "Logged off at " now ". Thank you for calling!"
- display accinfo
- display "Please enter your choice: "

input string Accepts a line of text from the user and writes it to the file that has been opened with the `open text file` or `open user file` commands.

input text Invokes the NovaServer line editor and allows the user to enter text. When the user types `.S`, the information is written to the file that has been opened with the `open text file` or `open user file` commands.

request return Waits until the user presses Return. No prompt is displayed. (Use the `display` command to display a prompt.)

request verification Waits for the user to type `Y` for Yes or `N` for No. Other keystrokes are rejected. If the user presses `Y`, the script continues. If the user presses `N`, the script exits.

print file "*filename*" Displays the specified text file on the user's terminal, with word-wrap.

print paged text "*filename*" Displays the specified text file on the user's terminal, with word-wrap and prompts after every page of text.

TERMINAL EMULATION COMMANDS

clear screen Clears the screen (to the current background color) on terminals that support screen clearing.

cursor up *number* Moves the cursor up *number* of lines on terminals that support cursor movement.

cursor down *number* Moves the cursor down *number* of lines on terminals that support cursor movement.

cursor right *number* Moves the cursor right *number* of spaces on terminals that support cursor movement.

cursor left *number* Moves the cursor left *number* of spaces on terminals that support cursor movement.

print ANSI "*filename*" Transmits the specified pre-formatted ANSI graphics file (created with `AnsiMouse` or a similar program) to the user, without word-wrap, page prompts, or other formatting.

black bgcolor Changes the background color to black on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen black.

black forecolor Changes the foreground color to black on terminals that support color changes. Affects only text displayed after this command is executed.

blue bgcolor Changes the background color to blue on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen blue.

blue forecolor Changes the foreground color to blue on terminals that support color changes. Affects only text displayed after this command is executed.

cyan bgcolor Changes the background color to cyan on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen cyan.

cyan forecolor Changes the foreground color to cyan on terminals that support color changes. Affects only text displayed after this command is executed.

green bgcolor Changes the background color to green on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen green.

green forecolor Changes the foreground color to green on terminals that support color changes. Affects only text displayed after this command is executed.

magenta bgcolor Changes the background color to magenta on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen magenta.

magenta forecolor Changes the foreground color to magenta on terminals that support color changes. Affects only text displayed after this command is executed.

red bgcolor Changes the background color to red on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen red.

red forecolor Changes the foreground color to red on terminals that support color changes. Affects only text displayed after this command is executed.

white bgcolor Changes the background color to white on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen white.

white forecolor Changes the foreground color to white on terminals that support color changes. Affects only text displayed after this command is executed.

yellow bgcolor Changes the background color to yellow on terminals that support color changes. Affects only text displayed after this command is executed. Follow with `clear screen` to make the entire screen yellow.

yellow forecolor Changes the foreground color to yellow on terminals that support color changes. Affects only text displayed after this command is executed.

FILE COMMANDS

download file "*filename*" Sends the specified file to the user.

upload file "*pathname*" Begins an upload from the user's terminal into the specified folder.

open text file "*filename*" Opens the specified text file and prepares it for writing. If the file does not already exist, it is created. If it does already exist, new information is added to the end of the file. The file is automatically closed when another `open text file` or `open user file` command is encountered, or when the script ends.

open user file Opens text file with the same name as the account in the NS Surveys folder and prepares it for writing. If the file does not already exist, it is created. If it does already exist, new information is added to the end of the file. The file is automatically closed when another `open text file` or `open user file` command is encountered, or when the script ends.

send output to *"script name"* Opens a script for output. Much like the open text file or open user file command, except that commands like write and input string send their output to the script.

write *"text" variable "text" variable...* Writes the given information to the file opened with open text file or open user file. A carriage return is generated at the end of the statement. The text components and variables can be mixed in any combination, as in the display command.

insert in log *"text"* Inserts the specified text in the user log.

NOVATERM COMMANDS

size window *width;height* Sets the size of the NovaTerm menu window to the specified width and height.

draw picture *0;0;picture;1* Draws the specified picture (from the HTML Files folder, inside the NS Files folder) in the NovaTerm menu window. The picture name used may not contain a period. The first two numbers must always be zero; future versions of NovaTerm may support overlaying multiple pictures in the window. The last parameter must always be 1.

click rect *key X coordinate 1; Y coordinate 1; X coordinate 2; Y coordinate 2* Defines a rectangular click region (using the given coordinates) in the NovaTerm menu window that, when clicked, activates the menu choice with the key equivalent specified. There is a semicolon between each coordinate, but there is no semicolon between the key and the first X coordinate parameter.

click oval *key X coordinate 1; Y coordinate 1; X coordinate 2; Y coordinate 2* Defines an oval click region (using the given coordinates) in the NovaTerm menu window that, when clicked, activates the menu choice with the key equivalent specified. There is a semicolon between each coordinate, but there is no semicolon between the key and the first X coordinate parameter.

play sound "*filename*" Plays the specified sound resource, stored on the client's disk. You must convert sounds to NovaTerm format using MenuMaker (see Chapter 19, "MenuMaker Reference"), place them in the HTML Files folder, and make sure they are downloaded to the client by adding a line to the CheckVersion template (in the Templates folder, inside the NS Files folder) like the following:

```
sound:chirp
```

play movie "*filename*" Plays the specified movie, stored as a QuickTime file on the client's disk.

request URL "*URL*" A URL is a Uniform Resource Locator, the World Wide Web standard method of naming the location of a resource on the Internet. NovaServer uses URLs internally to identify the locations of resources on the server, as well as to identify Web pages on the Internet. You can use the `request URL` command with NovaTerm callers (but not with TTY, ANSI, VT100, or RIP callers) to pull up a message forum, file library, HTML document, or other resource from your own NovaServer, and, if you have licensed the NovaServer Web Out option, hypertext pages from the Internet.

Resources on your NovaServer can be accessed with URLs in the following formats:

<code>http://*/library/<i>libraryname</i></code>	opens file library
<code>http://*/news/<i>forumname</i></code>	opens message forum
<code>http://*/mail/**</code>	opens caller's mailbox
<code>http://*/file/<i>filename</i></code>	opens document inside HTML Files
<code>http://*/external/<i>externalname</i></code>	runs HTML external
<code>http://*/design/<i>refnumber</i></code>	opens a design element by reference number
<code>interact://*/external/<i>extname</i></code>	opens I/O window and runs text external
<code>interact://*/script/<i>scriptname</i></code>	opens I/O window and runs script

■ If you have licensed the Web Out option, you may also use any World Wide Web URL which begins with `http`.

To find out a server component's design reference number, watch the NovaTerm History window as you access the desired element. The full URL, in the `http://*/design/#` format, is displayed and may be copied to the clipboard. The Main Menu's reference number is always 17; other elements' reference numbers are assigned at random as you build your server's menu structure.

For more information on HTML and URLs as supported by NovaServer, see Chapter 16, "HTML Reference."

RIP COMMANDS

setup RIP menu Clears the RIP graphics terminal and initializes it for displaying custom RIP menu graphics.

draw RIP icon *x coordinate;y coordinate;RIP icon name;1*
Draws the specified RIP icon in the RIP display. The first two numbers specify the screen coordinate at which the icon is drawn. The final parameter must always be 1.

RIP click *keyX coordinate 1;Y coordinate 1;X coordinate 2;Y coordinate 2* Defines a rectangular click region (using the given coordinates) in the RIP graphics window that, when clicked, activates the menu choice with the key equivalent specified. There is a semicolon between each coordinate, but there is no semicolon between the key and the first X coordinate parameter.

print RIP "*filename*" Transmits the specified pre-formatted RIP graphics file (created with RIPaint™ or a similar program) to the RIP terminal, without word-wrap, page prompts, or other formatting.

OTHER COMMANDS

exit Exits the script, returning to the calling script (if any). If the script was called as a function, `exit` performs the same function as `return 0`.

return *number* Terminates the currently executing script and returns control to the calling script, if any. If the script was called as a function, the indicated number is used as the return value of the script.

run script "*script name*" Runs the specified script as a subroutine. The current script is put on hold until the called script exits or returns.

launch external "*external name*" Launches the specified external from the NS Externals folder.

begin auto menus Not executed by NovaScript; used only by the NovaServer menu editor to determine where the automatically-generated portion of a menu script begins.

NOVASCRIPT COMMAND MINI-INDEX

ask	278	magenta bgcolor	288
begin auto menus	292	magenta forecolor	288
black backcolor	288	memberOf	278
black forecolor	288	next repeat.....	282
blue bgcolor	288	open text file.....	289
blue forecolor	288	open user file	289
clear screen	287	pause for	286
click oval	290	play movie	291
click rect	290	play sound	291
cursor down	287	print ANSI.....	287
cursor left.....	287	print file	287
cursor right	287	print paged text	287
cursor up	287	print RIP	292
cyan bgcolor	288	put user in group	286
cyan forecolor.....	288	red bgcolor	288
delete account	286	red forecolor.....	289
disable aborts	286	remove user from group	286
disconnect	286	repeat	281
display	286	request return	287
download file	289	request URL	284, 291
draw picture	290	request verification	287
draw RIP icon.....	292	return	284, 292
else	279	RIP click.....	292
enable aborts	286	run script	284, 292
end if.....	279	send output to	290
end repeat	281	setup RIP menu	292
exit	274, 292	size window	290
exit repeat	282	toggle word wrap	286
green bgcolor	288	upload file	289
green forecolor	288	white bgcolor	289
if	279	white forecolor.....	289
input string	287	write	290
input text.....	287	yellow bgcolor	289
insert in log.....	290	yellow forecolor.....	289
launch external.....	274, 285, 292		

AUTOMATICALLY EXECUTED SCRIPTS

The following scripts, stored in the List Scripts window (choose Scripts from the Setup menu) are executed whenever the server needs to display a particular part of the user interface. You can change the whole user interface (even translating the entire server into another language) by creating these scripts. In many cases, if the script does not exist, NovaServer uses a built-in prompt. In other cases, users see a notice that a script is missing.

AccountAlreadyOnline	EnterForum
AfterScan	EnterLibrary
AnotherName	EnterNodeChat
AskDownload	Exit
ASPause	ExitChat
AuditWarning	ExitConf
BadGroupName	ExitNodeChat
BadHandle	ExtendedHelp
BeforeMainMenu	ExtendedPromptHelp
BeforeScan	FlatBroseDownloadNew
BeginnerModeHelp	FlatBrowse
CallPostRatioExceeded	FlatBrowseDownload
CharacterSetAsk	FlatBrowseNew
CharacterSetHelp	FlatBrowseRelease
ChatRequest	FlatBrowseReleaseNew
CheckConfig	FlatHelp
ChooseNode	FlatReadHelp
ConfHelp	ForcedHangup
ConfirmAbortText	ForumSubject
DeleteingMail	ForumTo
DeleteMarked	ForwardTo
DisplayFile	Hangup
DisplayFileHeader	HangupAfterBatch
DocEnterEditor	HotMenuHelp
Download	Inactivity1
DownloadExceeded	Inactivity2
DownloadOptions	InputError
DrawConf	InternodeCommands
DrawConfRip	InvalidMenuChoice
EditTerminalHeader	Launch
EndOfMenu	LibraryHelp
EnterChat	LibraryInfo
EnterConf	LibraryListEnd
EnterEditor	LibraryListNoFile

LibraryNewscanPromptHelp	NewListLastname
LibraryPause	NewListLinefeeds
LibraryPromptHelp	NewListPassword
LibraryPromptText	NewListPhone
LibUploadLimit	NewListPrompt
LineEditHelp	NewListTerminal
ListNodeHeader	NewMustHaveHandle
LogoffConfirm	NewNoBotherAsk
Logon	NewOnOffNotifyAsk
LogonLogoffNotifyHelp	NewPassAskAgain
LogonPrompt	NewPasswordAsk
LogonTimeExceeded	NewPhoneAsk
MailHeader	NewsCan
MailPrompt	NewsCanFinished
MailSubject	NewTermAsk
MessageDoesntExist	NewThisAsATest
MessageMarked	NewUser1
MessagesMarked	NewUser2
NewBeginnerAsk	NewWhatIsCS
NewBSAsk	NoBotherHelp
NewCityStAsk	NoBranches
NewColumnsAsk	NodeChatAlert
NewCompTypeask	NodeNotAvail
NewCSError	NoDownloadPerm
NewCSnot	NoMail
NewDestBSAsk	NoMailWaiting
NewDestBSHelp	NoNewEmail
NewEmail	NoPostPermission
NewFirstNameAsk	NotAvail
NewForumPrompt	NotEnoughTimeToDownload
NewHandleAsk	NotSubscribed
NewHandleTaken	NovaTermLogon
NewHandleTaken	OldPasswordAsk
NewHotMenusAsk	OutOfTime
NewLastNameAsk	PassError
NewLFHelp	PassLogoff
NewLineFeedAsk	PassPrompt
NewListBackspace	PasswordVerified
NewListBeginner	PostAnonymous
NewListCity	PressContinue
NewlistClear	PressReturn
NewListColumns	ProtocolHelp
NewListComputer	RememberYourPassword
NewListFirstname	ReturnToMail
NewListHandle	Scanning
NewListHotMenus	SelectBasesText0

SelectSubsText1
SelectSubsText2
SendDocumentTo
SendMailTo
Shutdown
Subject
TelnetFooter
TelnetHeader
TermTypeHelp
TransferSuccessful

TurnToTreeWarning
Upload
UploadOptions
UserListFull
Vote
Welcome
WelcomeBackText
WelcomeText
YouAreUser
YourPasswordIs

HTML REFERENCE

- *This chapter introduces the basic concepts of HTML and explains the structure of an HTML document.*

HTML BASICS

HTML is the HyperText Markup Language, the Internet standard for creating documents for the World Wide Web. In addition to providing a standard way of specifying document structure and embedding text, graphics, and types kinds of media, HTML also provides a way to link documents together using hotlinks—tagged words in one document that point to another document.

Before we get too deeply into the subject of HTML, it is worth pointing out that entire books could be written about HTML and Web publishing. In fact, many have. We suggest getting a copy of one or more of these books, such as *HTML Sourcebook* by Ian S. Graham (John Wiley & Sons, 1995). While much information on HTML is available in electronic form, nothing beats a book for sheer usefulness.

Speaking of electronic references, however, the best place to get up-to-the-minute information and discussion about HTML and other Web issues is, naturally, on the Internet itself. Point your Web browser at <http://www.w3.org/> to retrieve the home page for Web standards efforts. Visit the newsgroup `comp.infosystems.www.authoring` for lively discussions on HTML issues. And, finally, of course, looking at the HTML source for other people's pages is a great way to answer questions about HTML design for yourself.

A huge amount of information about HTML is widely available, and most of it won't fit into the limited space available in this manual. Therefore, we must, regrettably, assume that you can find this information if you need it, and actually include very little of it here. This chapter, then, serves to introduce you to HTML if you've never seen it before, and also to explain the HTML extensions supported by NovaTerm's built-in browser.

Although HTML is the *lingua franca* of the Web, you don't have to be on the Internet to use HTML with NovaServer. You can write and serve HTML documents to users of your server without an Internet connection of any sort. In fact, you can create a complete user interface for your server entirely in HTML—and what's more, every text resource (even electronic mail messages, message forum articles, or file descriptions in libraries) can be an HTML document, complete with links to other server or Internet resources.

NovaTerm, the graphical client software for Macintosh and Windows, supports HTML level 1 with certain extensions. NovaTerm does not currently support forms (level 2) or tables or style sheets (level 3). (Forms and other features may be supported in a future upgrade.) Text-based and RIP (Remote Imaging Protocol) terminal programs do not support HTML, so NovaServer's HTML features do not work with these callers. NovaTerm is required to take advantage of HTML.

HTML documents are created by embedding special codes, known as *tags*, into ordinary text files. You can write HTML documents with any word processor that can save files in plain ASCII text format—that is, most of them. NovaTerm can also be used to create HTML documents, either offline or online; it has features which makes creating such documents somewhat easier than in most word processors, such as the ability to make selected text into a hotlink. (See the *NovaTerm 4.0 User Guide* for more information on creating documents with NovaTerm.)

All HTML tags are enclosed in angle brackets (greater-than and less-than symbols). Many tags are *containers*, which enclose text and cause all the text tagged to be treated in a certain way. Containers are actually two tags—one tag which marks the beginning of the enclosed text, and another that marks the end of the text. For example, the <A> (Anchor, or hotlink) tag is a container that encloses the text to be marked as a hotlink. The end tag is (all container tags use a version of the tag with a slash at the beginning to indicate the end of the enclosed text).

Some tags have attributes—additional parameters, enclosed in brackets, that declare more information about the tag. For example, the `<A>` tag includes a `HREF` attribute that is used to indicate the URL that the hotlink should open. A complete `<A>` tag might therefore look like this: ``. Attributes containing spaces must be enclosed in single or double quotation marks.

An *element* is any chunk of information—a paragraph, a section (part), or an image—in an HTML document. Some elements are delineated by container tags (for example, a level-one heading begins with `<H1>` and ends with `</H1>`). In such a case, the information enclosed by the container is the element, not the tags themselves. In other instances, the tag itself may incorporate an element (such as a graphic) by reference, as with the `` tag.

Excess white space (non-printing characters such as spaces, tabs, and carriage returns) is ignored in HTML documents. (The only exception to this is the text enclosed in a `<PRE>` tag, which is displayed exactly as it is written, carriage returns and all.) No more than one consecutive space is permitted. Instead of indicating the end of a paragraph with one or more carriage returns, like you do in a word processor, you use the `<P>` tag. (If you don't use `<P>` tags, all the text in your document run together into one big paragraph, regardless of the number of blank lines you've left.) The exact format of the paragraph, such as the space between paragraphs and the indent (if any) is up to the user's browser.

This last statement is so important that it bears amplifying: the format of your document, as displayed to the user, is left largely in the hands of the user's browser. Since you don't know what browser your reader is using, it is best not to write HTML that relies too heavily on a particular browser's features. HTML is not a page-description language. It marks content (*this is a header*), not layout (*this is 14-point Times*). While NovaTerm supports some non-standard tags to make it easier to design pages that look the way you want them to, most other browsers do not support these tags, so these documents will look the way you expect only when viewed with NovaTerm. For this reason, you should avoid using NovaTerm-specific tags in documents that you publish to the Web at large (instead of only to the users of your server).

UNIFORM RESOURCE LOCATORS (URLS)

A URL is a Uniform Resource Locator, the World Wide Web standard method of naming the location of a resource on the Internet. NovaServer uses URLs internally to identify the locations of resources on the server, as well as to identify Web pages on the Internet. You can use URLs to pull up a message forum, file library, HTML document, or other resource from your own NovaServer, and, if you have licensed the NovaServer Web Out option, pages from the Internet.

URLs begin with an access method (typically HTTP, for the HyperText Transfer Protocol, although other access methods are also available). NovaServer and NovaTerm support HTTP; addition of other access methods is planned for future versions of NovaServer. The access method is followed by the name of the server (such as `www.resnova.com`) and the Unix-style directory path to the document to be retrieved. If no document is specified, the server returns a default document.

You can use the following URL formats to specify resources on your NovaServer.

<code>http://*/library/libraryname</code>	opens file library
<code>http://*/news/forumname</code>	opens message forum
<code>http://*/mail/*/</code>	opens caller's mailbox
<code>http://*/file/filename</code>	opens document inside HTML Files
<code>http://*/external/externalname</code>	runs HTML external
<code>http://*/design/refnumber</code>	opens a design element by reference number
<code>interact://*/external/extname</code>	opens I/O window and runs text external
<code>interact://*/script/scriptname</code>	opens I/O window and runs script

- If you have licensed the Web Out option, you may also use any World Wide Web URL which begins with `http`.

To find out a server component's design reference number, watch the NovaTerm History window as you access the desired element. The full URL, in the `http://*/design/#` format, is displayed and may be copied to the clipboard. The Main Menu's reference number is always 17; other elements' reference numbers are assigned at random as you build your server's menu structure.

HTML DOCUMENT STRUCTURE

Stripped to its barest essentials, the HTML document structure looks like this:

```
<HTML>
<HEAD>
    .
    . {header elements go here}
    .

</HEAD>
<BODY>
    .
    . {body elements go here}
    .

</BODY>
</HTML>
```

The first thing in any HTML document is the `<HTML>` tag. Similarly, the last thing in any HTML document is the `</HTML>` tag. You can read the `<HTML>` tag as meaning *beginning of HTML* and the `</HTML>` tag as meaning *end of HTML*. A pair of tags that define the start and end of a certain type of information are called a container. In essence, the entire HTML document is enclosed in the container defined by the `<HTML>` and `</HTML>` tags.

Within the HTML document are two more containers, delineated by the <HEAD> and <BODY> tags and their matched closing tags </HEAD> and </BODY>. Thus, we see that containers can enclose other containers. And, in fact, your HTML document is likely to have many such nested containers-within-containers. (There are rules about which containers can contain other containers. Most of these rules are common sense—for example, you can't have a heading inside another heading, or body text in the document header—and we won't go into this aspect of HTML authoring in much detail here.) When writing tags for nested containers, close the innermost container first. In our example, the </BODY> tag comes before the </HTML> tag because the body is inside the HTML document.

The header section contains information *about* the document, such as its title. The body section contains the information *of* the document: the material you want to display to the user. The following sections of this manual discuss the tags permitted in both the header and the body sections.

In the tag descriptions that fill the rest of this chapter:

- [] square brackets indicate optional text or attributes
- { } curly braces indicate that one item from the options listed should be used
- text* italics indicate that you should enter information of the specified type
- text underlining indicates that the tag or attribute is not part of the HTML level 1 standard but is supported by the NovaTerm HTML browser

HEADER TAGS

<TITLE> This required tag (the only required header tag) identifies the title of the document, which may be (and usually is) different from the document's filename. A short title may be meaningless out of context; be sure to use a descriptive title, but make it no longer than necessary.

```
<TITLE>ResNova Software, Inc.</TITLE>
```

<BASE HREF=url> Defines the URL to which relative references in this document are relative to. Normally, relative references are relative to the directory which contains the document. For example, a document which contained a tag such as `` would normally retrieve this file from the directory which contains the document. The `<BASE>` tag allows you to define all relative URLs as relative to some other directory or even another server.

```
<BASE HREF=http://other.server.com/pictures/>
```

<TEMPLATE NAME=filename> Defines the WindowScript template (stored in the Templates folder inside the NS Files folder) which NovaTerm should use to display the document. WindowScript is an English-like platform-independent system for defining windows that work the same on the Macintosh and under Windows. NovaTerm uses a pre-release version of WindowScript that has been submitted to the Internet Engineering Task Force (IETF) for consideration as an Internet standard. Since the standard has not been finalized, it is not documented in this manual. Pre-release information about WindowScript is available on NovaCentral, the ResNova support server.

```
<TEMPLATE NAME=WelcomeWindow>
```

BLOCK STRUCTURE TAGS

<P> Defines a paragraph element. Each paragraph must be placed in its own container. Early versions of HTML defined `<P>` as the *end of paragraph* tag. Newer standards define a paragraph *element* which is enclosed by `<P>` and `</P>`. However, it is not strictly necessary to close a paragraph container; each `<P>` tag implicitly closes the preceding paragraph container. For this reason, you will rarely see (or use) `</P>`.

**
** A line break element; forces the following text to be displayed at the beginning of a new line. Does not end the paragraph; everything between `<P>` and `</P>` tags (or from one `<P>` tag to the next if `</P>` is not used) is considered a paragraph, even if it contains line breaks. Use line breaks for street addresses and other information which should be formatted on separate lines, but is logically one unit of information.

<PRE> Preformatted text, such as program listings. Must be closed with `</PRE>`. Within a preformatted text container, text is displayed in a monospaced font such as Monaco or Courier, and line breaks are presented as they occur. You may use anchor elements and phrase markup such as `` and ``, but you may not use other containers. Similar containers are `<XMP>` (the example container) and `<LISTING>` (a container designed for source code listings, except that `<XMP>` and `<LISTING>` ignore any included HTML tags except for their respective closing tags).

<H1> . . . <H6> HTML supports six levels of headings in documents. Level 1 is the most important heading and is usually displayed in a large, bold font, while level 6 is the least important heading. Headings must be closed with `</H1>` through `</H6>`. Headings are always on their own line, so it is not necessary to use a `<P>` tag before or after a heading. Use headings to name the sections of your document, not to change the font's size, and use the headings in order—don't use `<H3>` unless you already have level 2 and level 1 headers in your document.

<ADDRESS> Used to format an address. Typically, browsers display an address element in an italic font, indented slightly from the surrounding text. Close with `</ADDRESS>`. The `
` tag is useful for breaking the lines of an address without forcing a new paragraph.

<BLOCKQUOTE> Used for large blocks of quoted material, which are usually displayed in an italic font, indented slightly from the surrounding text. Close with `</BLOCKQUOTE>`. The `
` tag is useful within a `<BLOCKQUOTE>` container for formatting poetry.

IDIOMATIC PHRASE TAGS

<CITE> Used for citations of other documents, such as are frequently found in academic and scientific research papers. Most browsers display this element as italic text. Close with `</CITE>`.

<SAMP> Indicates a sequence of literal characters. Most browsers display this element as a monospaced font, such as Courier or Monaco. Close with `</SAMP>`.

<CODE> Used for presentation of computer source code. Most browsers display this element as a monospaced font, such as Courier or Monaco. Close with `</CODE>`.

<KBD> Used to designate text to be entered by a user on their keyboard, as in instructions for using a computer program. Most browsers display this element as a monospaced font, such as Courier or Monaco. Close with `</KBD>`.

<VAR> Used to designate text as a placeholder variable, which should be replaced with the indicated kind of data. Most browsers display this element as italic text. Close with `</VAR>`.

**** Used to designate emphasized text. Most browsers display this element as italic text. Close with ``.

**** Used to designate strongly emphasized text. Most browsers display this element as boldface text. Close with ``.

TYPOGRAPHIC TAGS

Used to designate text that should be displayed in a particular font, color, or size. Use the name of the Macintosh font you want to use; the Windows version of NovaTerm automatically chooses a font similar to the specified Macintosh font, if one exists. The Color attribute uses the two-digit hexadecimal values (00-FF) of the red, green, and blue components of the desired color. The Size attribute can use either a point size or a relative size from 1-6 (1 is the largest, 6 is the smallest). Close with ``.

**** Used to designate text that should be displayed in boldface. Close with ``. Before using the `` container, please check to see if one of the idiomatic tags, such as ``, would be more appropriate.

<I> Used to designate text that should be displayed in italic. Close with `</I>`. Before using the `<I>` container, please check to see if one of the idiomatic tags, such as `<BLOCKQUOTE>`, `<ADDRESS>`, `<CITE>`, `<VAR>`, or ``, would be more appropriate.

<TT> Used to designate text that should be displayed in a monospaced font such as Monaco or Courier. Close with `</TT>`. Before using the `<TT>` container, please check to see if one of the idiomatic tags, such as `<PRE>`, `<XMP>`, `<LISTING>`, `<SAMP>`, `<CODE>`, or `<KBD>`, would be more appropriate.

<CENTER> Centers the paragraphs contained between the `<CENTER>` and `</CENTER>` tags. This tag is supported by NovaTerm and some other browsers, including Netscape.

<RIGHT> Right-justifies the paragraphs contained between the **<RIGHT>** and **</RIGHT>** tags.

<HR> Instructs the browser to draw a horizontal dividing line between this and the next section.

LIST DEFINITION TAGS

**** Begins an unordered list. Unordered lists are lists of items prefaced with bullets, dashes, or in some other non-numbered format. Close with ****. Most browsers indent lists. Each list item is prefaced with the **** tag. Lists may contain additional lists, which are further indented.

The following items are listed:

```
<UL>
```

```
<LI>First list item
```

```
<LI>Another list item
```

```
.
```

```
.
```

```
.
```

```
<LI>Last list item
```

```
</UL>
```

**** Begins an ordered list—a list of items prefaced with numbers. The numbers are generated automatically by the browser. Close with ****. Most browsers indent lists. Each list item is prefaced with the **** tag. Lists may contain additional lists, which are further indented.

<DIR> Begins a directory. A directory is much like an unordered list, except that some browsers may render it slightly differently (for example, in two columns). Close with **</DIR>**. Each directory item is prefaced with the **** tag.

<MENU> Begins a menu. A menu is much like an ordered list, except that some browsers may render it slightly differently (for example, with less space between items). Close with **</MENU>**. Each menu item is prefaced with the **** tag.

**** Indicates the beginning of a list (or directory or menu) item. The **** tag is optional.

<DL> Begins a definition list. Definition lists are structures for presenting dictionary-style definitions. Close with **</DL>**. The terms and their definitions are formatted with the **<DT>** and **<DD>** tags.

```

<DL>
  <DT>Term to be defined
  <DD>Definition of the term
  <DT>Next term to be defined
  <DD>Definition of the term
  .
  .
  .
</DL>

```

<DT> Indicates the beginning of a term in a dictionary-style definition. The `</DT>` tag is optional. You may use one or more `<DT>` tags before each `<DD>`.

<DD> Indicates the beginning of a definition. The `</DD>` tag is optional.

HYPertext AND MEDIA TAGS

**** Defines a hypertext link (a hotlink) to another document. The text contained between the `<A>` and `` tags is displayed in a way that makes it clear that it is a hotlink (usually in color and/or underlined). If you are creating an HTML document for NovaServer, you can use the following URL formats to specify resources besides HTML documents on your NovaServer.

<code>http://*/library/<i>libraryname</i></code>	opens file library
<code>http://*/news/<i>forumname</i></code>	opens message forum
<code>http://*/mail/*/</code>	opens caller's mailbox
<code>http://*/file/<i>filename</i></code>	opens document inside HTML Files
<code>http://*/external/<i>externalname</i></code>	runs HTML external
<code>http://*/design/<i>refnumber</i></code>	opens a design element by reference number
<code>interact://*/external/<i>extname</i></code>	opens I/O window and runs text external
<code>interact://*/script/<i>scriptname</i></code>	opens I/O window and runs script

- If you have licensed the Web Out option, you may also use any World Wide Web URL which begins with `http`.

To find out a server component's design reference number, watch the NovaTerm History window as you access the desired element. The full URL, in the `http://*/design/#` format, is displayed and may be copied to the clipboard. The Main Menu's reference number is always 17; other elements' reference numbers are assigned at random as you build your server's menu structure.

**** Displays an image, stored at the URL specified in the SRC attribute, in the document. The image can be displayed in line with text. The alternate text, specified by the ALT attribute, is displayed in browsers that do not support images (or when the user turns off auto-loading of images). The ALIGN attribute determines how the picture is placed vertically relative to the text around it, so that either the top, middle, or bottom of the picture is aligned with the text. (ALIGN is not supported by the NovaTerm browser.) CAPTION is a NovaTerm-specific attribute that tells the browser to display the specified text under the graphic.

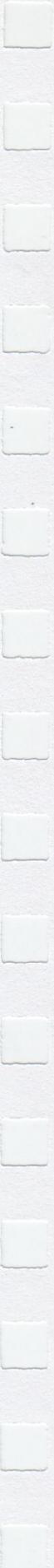
<SND SRC=soundname> A NovaTerm-only tag that causes a sound, stored in the service file under the resource name in the SRC attribute, to be played. Sounds should be converted to NovaTerm format using MenuMaker (see Chapter 19, "MenuMaker Reference"), stored in the HTML Files folder, and downloaded to NovaTerm at sign-on time by adding a line like the following to the CheckVersion template:

```
sound:chirp
```

<MOVIE SRC=filename> A NovaTerm-only tag that causes a QuickTime movie, which must be already stored on the client's disk in the specified filename, to be played. As with the IMG tag, the movie can be displayed in line with text.

HTML TAG MINI-INDEX

A	307
ADDRESS	304
B	305
BODY	301-302
BASE	303
BLOCKQUOTE	304
BR	303
CENTER	305
CITE	304
CODE	304
DD	307
DIR	306
DL	306
DT	307
EM	305
FONT	305
H1-H6	304
HEAD	301-302
HR	306
HTML	301
I	305
IMG	308
KBD	305
LI	306
MENU	306
MOVIE	308
OL	306
P	303
PRE	304
RIGHT	306
SAMP	304
SND	308
STRONG	305
TEMPLATE	303
TITLE	302
TT	305
UL	306
URLs	300
VAR	305



.....

LINE EDITOR REFERENCE

- *This chapter tells you how to use the line-based editor available in NovaServer's text-based (TTY/VT100/ANSI) and text-based emulations.*

LINE EDITOR BASICS

NovaServer's line editor is a simple facility for entering text and for making changes to text resources and files. As a system operator, you will use it as part of your server's remote operations, since these functions must be performed in text mode (using TTY, VT100, or ANSI emulation).

When you invoke the editor by telling NovaServer you wish to post a message or edit a text resource, you are first presented with the banner below.

```

NovaSever Text Editor                                     Type ".?" for Help
=====

```

If you are editing an existing text file or resource, any text you enter is placed at the end of the file (unless you use the Insert command as described below). NovaServer does not display the existing contents of the file, but they're there nonetheless; you can use the List command to see for yourself.

As you enter text, NovaServer automatically starts a new line whenever you approach the right margin. There is no need to press Return after each line. Each line is assigned a number based on its position in the file being edited. Line numbers begin with 1 and are automatically re-assigned when new lines are inserted or existing lines are deleted. Unless you specify otherwise, lines do not actually end in carriage returns. NovaServer usually only stores carriage returns at the end of each paragraph, so that text can be reformatted for a caller's display width.

To edit lines that you have already entered, you enter line editor commands and, in some cases, specify the line number, or range of lines, to be edited. For commands that can work on a range of lines, you enter the starting line number, a hyphen, and the ending line number. The starting or ending line number may be omitted; in this case, NovaServer assumes you wish the command to apply from the beginning of the file or to the end of the file, respectively.

Any command that accepts a range of lines also accepts a single line number. If you do not specify a range (pressing Return instead of entering a line number or a range of numbers), NovaServer uses the default line or range. For some commands (specifically List and Read), the default range of lines includes the entire file. For other commands (such as Delete and Edit), the default line is the line you just finished typing.

Line range	Lines affected
3	Line 3
3-5	Line 3 through line 5
-5	From the beginning of the file through line 5
5-	From line 5 to the beginning of the file
-	The entire file

All NovaServer line editor commands begin with a period and must be entered as the first characters of a line. (If you actually want a period at the start of a line, type two periods.) When you type a period at the beginning of a line, NovaServer displays a prompt (>>) to let you know that it is ready for a command. Typing a command letter displays the command's name and waits for you to enter any options for the command. All commands must be terminated with a Return.

LINE EDITOR COMMANDS

- .A Abort.** Cancels the current editing session. If you are writing a message, the message is not posted. If you are editing a file, any changes you have made to the file are thrown out and the original file is left untouched.
- .S Save.** Saves the changes made during the current editing session. If you are writing a message, the message is posted. If you are editing a file, any changes you have made to the file are saved, and the original file is destroyed.

- .E Edit.** Edits the specified line or range of lines. If no line or range is specified, the line you just finished entering is edited. For each line edited, you are prompted to retype the line, or enter a period (.) to start with the line's original contents (you may then use the backspace or delete key to delete characters from the end of the line). When you have finished retyping or editing the line, press Return.
- .D Delete.** Deletes the specified line or range of lines. If no line or range is specified, the last line entered is deleted.
- .F Find/Replace.** Searches the file for a string of characters you specify. When the first occurrence has been found, NovaServer displays the line containing the matched string and a prompt asking you whether you would like to find the next occurrence (type N), exit the search operation (type X), replace the text with different text (type R), or replace all occurrences of the text with different text (type A). This may be more convenient than retyping the line for correcting small typographical errors.
- .I Insert.** Enters insert mode at the specified line. If you insert at line 5, for instance, the new text is inserted beginning with line 5. The existing line 5 is moved down to make room for the new text. Use .X to exit insert mode.
- .X Exit Insert.** Exits the insert mode, which is initiated with .I.
- .L List.** Displays the specified line or range of lines with line numbers.
- .R Read.** Displays the specified line or range of lines without line numbers.
- .M Move.** Moves the specified line or range of lines to another location in the file. After specifying the line or range and pressing Return, you are prompted for the target line number—the line where the moved text should be placed. Lines after the target line (including the target line itself) are moved to higher line numbers to make room for the moved information.
- .C Copy.** Copies the specified line or range of lines to another location in the file. After specifying the source line or range and pressing return, you are prompted for the target line number—the line where the copied text should be placed. Lines after the target line (including the target line itself) are moved to higher line numbers to make room for the copied information.

OTHER EDITOR COMMANDS

Control-W. Ends the current line as if you'd pressed Return, but does not add a carriage return to the line. Useful when writing NovaScript scripts that contain prompts that should not be followed by a carriage return.

Control-T. Ends the current line as if you'd press Return, but adds a space to the end of the line instead of a carriage return. Useful when inserting lines in the middle of a paragraph to force the added text to be formatted as part of the paragraph instead of beginning a new paragraph.

Control-C. Aborts most operations.

Backspace/Delete. Deletes the last character entered. Can also be used to cancel a command by backspacing over it.

SERVER DIRECTORY STRUCTURE

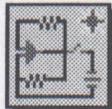
- *This chapter tells you what's where on your NovaServer's hard drive.*

For the purposes of this chapter's discussion, the NovaServer folder is the folder that contains the NovaServer application icon. The NovaServer folder contains a number of other files and folders besides the application; these are described below.

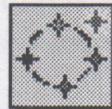
FILES



Accounts



Design



InfoLink™



NS Key



Resources

Accounts. The Accounts file is your NovaServer account database. All information about the user accounts and groups on your server are stored here.

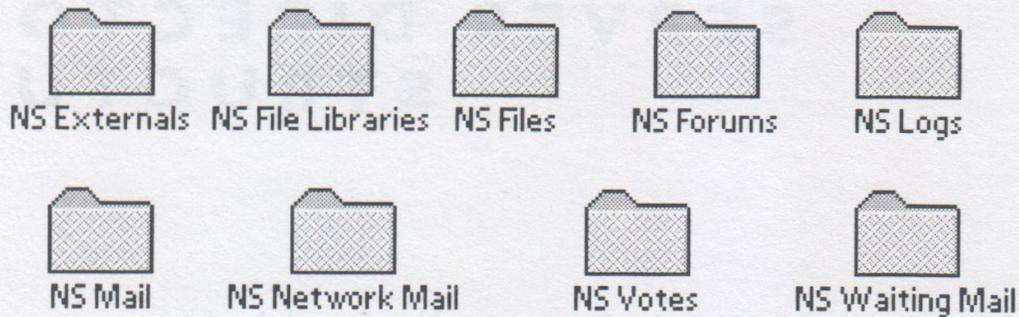
Design. The Design file contains your server's menu structure. The details of each server element (including its name, key equivalent, access level and group, and other settings) are stored here.

InfoLink.™ The InfoLink™ file contains details of the network sites you have defined.

NS Key. The NS Key file is your authorization to use NovaServer. It contains encrypted information that tells NovaServer the name of your server, your supervisor site (if any), the number of nodes and simultaneous users you can create, and the optional NovaServer features you have licensed.

Resources. The Resources file contains your NovaServer settings and options, along with the text resources (scripts) used by the server.

FOLDERS



NS Externals. The NS Externals folder contains any NovaServer externals you have licensed—small add-on programs that run within NovaServer. Instructions for writing your own externals are included with the full NovaServer installation.

NS File Libraries. The NS File Libraries folder contains one file for each file library you've created on your server. The file, which is given the same name as the library it is related to, contains the name and description of each file in the library. The actual files should be stored in a subfolder of the NS Files folder. If a library is networked, the NS File Libraries folder also contains a file with the same name as the library (except ending with the four characters *.inf*) that stores the InfoLink settings for the library.

NS Files. The NS Files folder contains several sub-folders, including:

- **Cache.** Contains the NovaServer World Wide Web cache. When NovaServer retrieves information from Web servers on the Internet, it stores a copy of the information in the Cache folder so that if another user needs the information, it is available without making another Internet request. NovaServer manages the cache for you, automatically purging files that have not been requested in a 24-hour period.
- **Client Software.** This folder contains a copy of the NovaTerm and RIPTerm client software packages.

- **Forum Attachments.** This folder contains the attached files in each NovaServer message forum. NovaServer automatically manages name conflicts for files in this folder and deletes files when the message that references them expires. If your users do not use attached files frequently, you can use a single folder; if your users make use of attached files on a regular basis, you may want to create a subfolder within this folder for each message forum. You can designate the folder where attached files for a specific message forum are stored by clicking the Folder button in the Message Forum component's settings window.
- **HTML Files.** This folder contains all the HTML documents, along with graphics and sound files, which can be accessed using URLs of the form: `http://*/file/filename`. You may create subfolders in this folder and access them by including the folder name in the URL.
- **Mail Attachments.** This folder contains the files attached to electronic mail messages. You can designate the folder where attached files for electronic mail messages are stored by clicking the Select Folder button in the E-Mail panel of the Server Options window (choose Options from the Setup menu).
- **RIP Files.** This folder contains two subfolders: Rip 1.5x Only and Rip 2.0x Only. The former stores 16-color icons for use with RIP 1.5x-compliant terminal software; the latter stores 256-color icons for use with RIP 2.0x-compliant terminal software.
- **Templates.** This folder contains custom WindowScript templates, if any are installed on your server. The CheckVersion template is mandatory. You can force a download of new graphics or sounds to a NovaTerm at sign-on by including the name of the image or sound file in the CheckVersion template.

In addition to the sub-folders listed above, the folders you created for storing files in your server's file libraries are also stored here. Create these folders using the Finder, then designate a specific folder for each library by clicking the Folder button in the File Library component's settings window.

NS Forums. The NS Forums folder contains a file (or two) for each message forum you've created on your server. The file, which is given the same name as the forum it is related to, contains all the messages in the forum. If the forum is networked, the NS Forums folder also contains a file with the same name as the forum (except ending with the four characters *.inf*) that stores the InfoLink settings for the forum.

NS Logs. The NS Logs folder contains sub-folders for the various types of logs generated by your server: error logs, InfoLink logs, server logs, sign on/off logs, and usage logs. Old logs remain in the appropriate folder until you delete them.

NS Mail. The NS Mail folder contains a file for each user account on your server. Each file stores the associated user's electronic mail. The files Network and /etwork (with a slash at the beginning of the name) are used to store electronic mail destined for another site.

NS Network Mail. The NS Network Mail folder contains a file for each network site defined with a File gateway type. The file is given the same name as the site with the word Export appended. Messages destined for a site are stored in the corresponding file. Files placed in the NS Network Mail file that do not contain the word Export in their filename are assumed to be incoming messages and are imported into the server.

NS Surveys. The NS Surveys folder stores files created with the NovaScript open user file command. See Chapter 15, "NovaScript Reference," for information on writing surveys in NovaScript.

NS Votes. The NS Votes folder contains a file for each voting topic defined on your server. Each file contains the question, choices, and current statistics for the associated voting topic.

NS Waiting Mail. Stores message batches, received from remote sites, that are waiting for a maintenance event to be imported to the appropriate mailboxes, forums, and libraries.

.....

MENUMAKER REFERENCE

- *In this chapter, you'll learn how to use the MenuMaker program supplied with NovaLink Professional to create menus for your server.*

MENUMAKER BASICS

MenuMaker is a NovaServer companion program that's designed to make creating your own custom graphical user interface easier. In Chapter 5, "NovaScript and Custom Menu Design," you learned how to write your own menu scripts for displaying custom graphics menus. MenuMaker makes it all easier. You just paste in a graphic, draw buttons where you need them, and MenuMaker generates the correct NovaScript statements for your NovaTerm and RIP menus—automatically.

MenuMaker also includes facilities for converting graphics to the format used by RIP 1.5x and for converting sounds to the cross-platform format used by NovaTerm.

GRAPHIC FILE FORMATS

You can create the graphics you use for your custom menus in any standard Macintosh paint program. However, before you can use them with NovaServer, you must convert them to a format understood by the graphical client which will use them. Standard Macintosh graphics are in the PICT format; unfortunately, none of the graphical clients supported by NovaServer can handle PICT.

Both the Macintosh and Windows versions of NovaTerm can understand JPEG and BMP (Windows bitmap) graphics. We suggest using JPEG, since the JPEG format supports true color (24-bit) graphics, yet usually produces smaller files thanks to its lossy compression. The lossy compression does mean, however, that if you repeatedly load and save images in JPEG format, some image degradation may occur. For this reason, we suggest that you keep images in PICT format during editing and only convert them to JPEG before using them on your NovaServer. Keep the PICT versions on hand in case you later want to make changes.

There are two versions of the RIP (Remote Imaging Protocol) standard currently available; 1.5x requires graphics in a special "RIP Icon" format; 2.0x uses graphics in BMP format. NovaServer detects which version of RIP the caller is using and uses the correct version of the graphic.

There are many programs available which can convert standard Macintosh PICT files to JPEG and/or BMP. One we like is the \$35 shareware GraphicConverter, which is available on NovaCentral, the ResNova Support Server. (We like it because it has a "batch convert" feature which can convert an entire folder full of graphics without human intervention.) Other commercial solutions include Equilibrium's DeBabelizer™ (which also has the ultra-cool batch conversion feature) and, of course, Adobe Photoshop.™

That leaves only the RIP icon format used by the RIP 1.5x protocol as the missing link. Luckily, MenuMaker has a function to convert your graphics to this format.

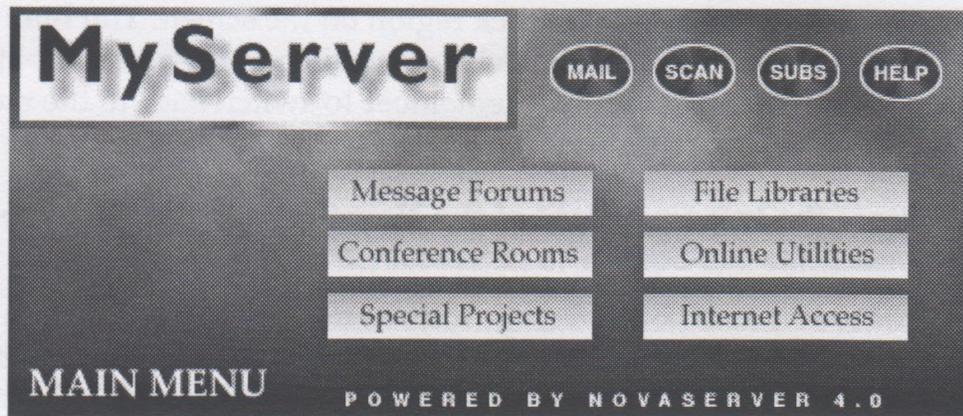
Each type of menu graphic must be stored in the appropriate folder on your NovaServer. All the folders mentioned below can be found inside the NS Files Folder.

- **NovaTerm graphics** (JPEG or BMP) in the HTML Files folder
- **RIP 1.5x icons** (ICN) in the RIP 1.5x folder inside the RIP Files folder
- **RIP 2.0x graphics** (BMP) in the RIP 2.0x folder inside the RIP Files folder

Graphics intended for NovaTerm should use names containing no spaces or periods. RIP graphics should use names are less than eight characters in length, also containing no spaces or periods. The extension of RIP graphics files should be ICN. The names of the files stored in the RIP 1.5x folder and the RIP 2.0x folder should be identical. For example, if your RIP 1.5x graphic is named MAINMENU . ICN, your RIP 2.0x graphic should also be named MAINMENU . ICN.

BUILDING A MENU

Let's walk through the process of creating a menu using MenuMaker. We'll start with the menu screen below, which was created in Photoshop.



To create a custom menu design:

- 1 **Open MenuMaker using the Finder.**

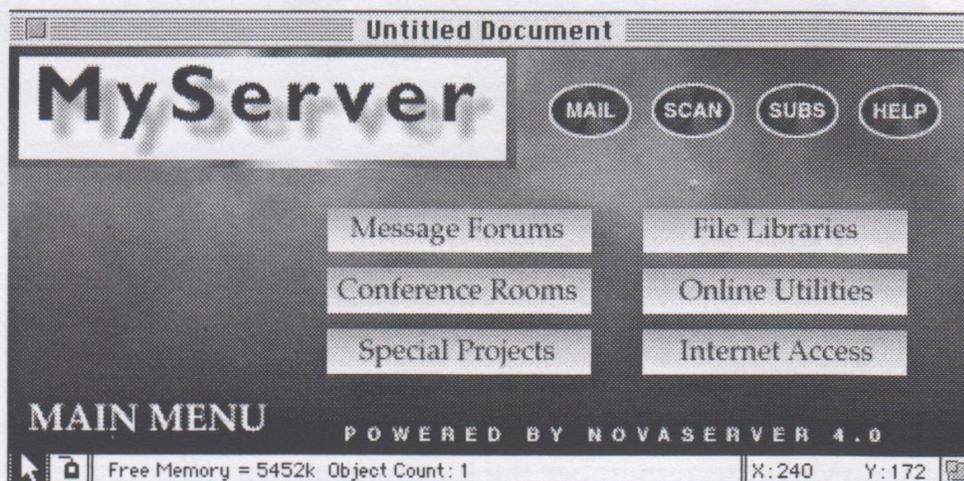
A new, untitled document window will appear.

- 2 **Copy the picture from the source document.**

In this case, we switch to Photoshop and select Copy from its Edit menu. Use whatever paint program the picture was created in.

- 3 **Switch back to MenuMaker and paste the picture into the untitled document.**

The graphic will appear in the MenuMaker window, which will be resized to fit the picture, as shown below.



- 4 **Click the mouse tool in the lower left corner of the MenuMaker window, or press Tab.**

The mouse tool will be selected.

- 5 **Draw a rectangle around a button to define a click region.**

MenuMaker shows your click region on the screen. You may erase it and try again by pressing Delete, or switch to the arrow tool to move or resize the click region. (Remember to switch back to the mouse tool when you're finished.)

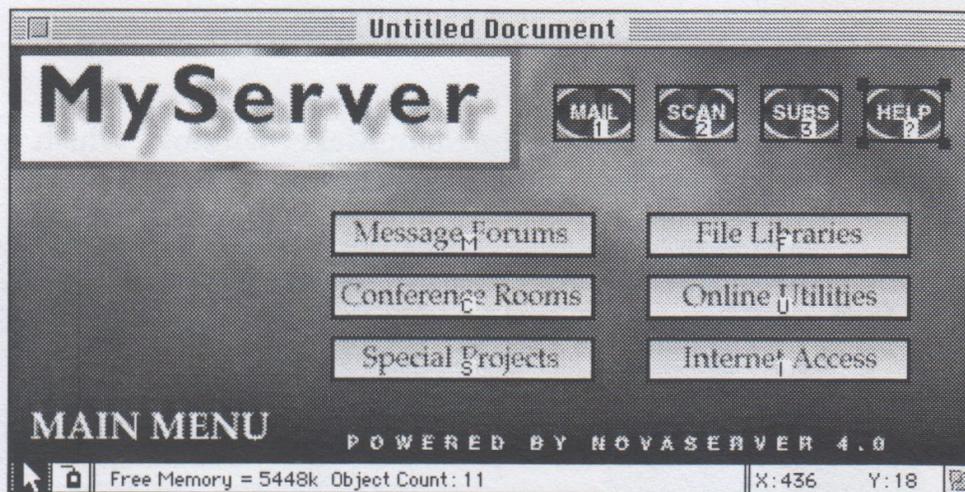
- 6 **Press the key equivalent of the NovaServer menu item you would like the button to activate.**

For example, if your message forums menu had a key equivalent of M, and you want the message forum menu to be opened when you click the message forums, press M. MenuMaker assigns the key you press to the selected click region.

- 7 **Repeat steps 5-6 to define the rest of the buttons.**

You may use the Copy and Paste commands on the edit menu to quickly copy click regions to same-sized buttons. Switch to the arrow tool, click the region you want to copy to select it, choose Copy, choose Paste, then drag the new region to its final location.

The finished main menu appears below.



- 8 **Save your completed menu design by choosing Save Menu from the File menu.**

The file you save is not used by NovaServer. It merely enables MenuMaker to remember the locations of your click regions so that they can be edited later.

9 Copy the JPEG and BMP versions of the graphic into the HTML Files and RIP 2.0x folders, respectively.

MenuMaker does not generate these files. You will need to create them yourself using a program like GraphicConverter, DeBabelizer, or Photoshop.

10 Convert the image to RIP 1.5x format by choosing Convert Pict to RIP Icon from the File menu.

MenuMaker will convert the file to RIP icon format and save it in the MenuMaker RIP Icons folder (in the MenuMaker application folder) as Menu_Pic.icn. Rename the file as appropriate and move it to the RIP 1.5x folder in the NS Files folder.

11 Choose Copy Menu Script from the Edit menu to generate the menu script.

12 Switch to the NovaServer application, open the Menu Editor (choose Menu from the Setup menu), and open the menu script for the desired menu.

To open a menu's menu script, click the menu's icon once to select it, then choose Get Info from the File menu, then click the Script button.

13 Choose Paste from the Edit menu.

The menu script will be pasted into the script window. A sample menu script generated by MenuMaker appears below.

```
• if term is NovaTerm
• Size Window 470;200
• Draw Picture 0;0;Menu_Picture;1
• Click Rect 1264;17;304;45
• Click Rect 2314;17;354;45
• Click Rect 3365;17;405;45
• Click Rect ?415;17;455;45
• Click Rect I310;139;439;161
• Click Rect F310;79;439;101
• Click Rect S156;139;285;161
• Click Rect C156;109;285;131
• Click Rect M156;79;285;102
• exit
• end if
• if term is RIPScrip
• Setup Rip Menu
• Draw Rip Icon 0;0;Menu_Pic;1
• Rip Click 1332;69;372;97
• Rip Click 2382;69;422;97
• Rip Click 3433;69;473;97
• Rip Click ?483;69;523;97
```

Continued on next page

- Rip Click I378;191;507;213
- Rip Click F378;131;507;153
- Rip Click S224;191;353;213
- Rip Click C224;161;353;183
- Rip Click M224;131;353;154
- exit
- end if

14 Edit the menu script to include the names of the graphics files and to make any other necessary changes.

The draw picture and draw RIP icon comands in the generated script request the files Menu_Picture and Menu_Pic, respectively. Edit these so they use the actual name of the file as stored in the HTML Files or RIP Files folder. (Do not include the ICN extension in the draw RIP icon comand.)

Another change we'll make in our example is to use click oval comands instead of click rect comands for the oval buttons. (RIP doesn't support oval buttons, but NovaTerm does.)

The edited script is shown below. The changed lines are in boldface.

- if term is NovaTerm
- Size Window 470;200
- **Draw Picture 0;0;MainMenu;1**
- **Click Oval 1264;17;304;45**
- **Click Oval 2314;17;354;45**
- **Click Oval 3365;17;405;45**
- **Click Oval ?415;17;455;45**
- Click Rect I310;139;439;161
- Click Rect F310;79;439;101
- Click Rect S156;139;285;161
- Click Rect C156;109;285;131
- Click Rect M156;79;285;102
- exit
- end if
- if term is RIPScrip
- Setup Rip Menu
- **Draw Rip Icon 0;0;MainMenu;1**
- Rip Click 1332;69;372;97
- Rip Click 2382;69;422;97
- Rip Click 3433;69;473;97
- Rip Click ?483;69;523;97
- Rip Click I378;191;507;213
- Rip Click F378;131;507;153
- Rip Click S224;191;353;213
- Rip Click C224;161;353;183
- Rip Click M224;131;353;154
- exit
- end if

15 If you the menu's Automatic Menu Script is activated, be sure to enter the following line after the part of the script created by MenuMaker.

- Begin Auto Menus

15 Close and save the menu script.

16 To create additional menus, choose New Menu from the File menu and return to step 2.

CONVERTING SOUNDS

Before sounds can be used by NovaTerm, they must first be converted to the cross-platform format shared by the Macintosh and Windows version of NovaTerm. MenuMaker can convert a standard System 7 sound to NovaTerm format. To do this, choose Convert Mac Sounds from the File menu, then select a file to be converted. The converted file will be stored in the MenuMaker Sounds folder in the MenuMaker application folder. Move it to the HTML Files inside the NS Files folder and name it as desired.

To download the sound to the user, add the following line to your CheckVersion file (in the Templates folder, inside the NS Files folder):

```
sound: soundname
```

Do *not* place a space after the colon.

Sounds can be played with the `play sound` NovaScript comand (see Chapter 15, "NovaScript Reference") or with the HTML `<SND>` tag (see Chapter 16, "HTML Reference"). Also, by using specific sound names, you can replace NovaTerm's built-in sounds with sounds of your own. Here are the sound names you can use to override NovaTerm's built-in sounds (exact spellings must be used):

```
Attach File  
Blip  
Chat Request  
Goodbye  
Hit Sound  
Logon  
Satellite  
Submit Account  
Transfer Complete  
Wake Up  
You have New Mail
```


CABLE CONFIGURATION

- *This chapter tells you the technical specifications required for a NovaServer-compatible serial modem cable.*

NovaServer needs to be able to sense whether a modem is connected to a caller (carrier detect active) or idle (carrier detect inactive) to allow it to respond quickly when callers disconnect, either intentionally or accidentally, without using a Disconnect server component. Most modem cables are not wired to allow this, as ordinary telecommunications programs do not need this information. Even so-called hardware handshaking cables used for high-speed modems aren't enough; NovaServer requires carrier detect *in addition to* the RTS/CTS handshaking supported by such cables.

Serial modem cables, wired properly to allow NovaServer to sense the status of the modem's carrier detect line, are available directly from ResNova. Cables stamped with the ResNova name are guaranteed to be compatible with NovaServer. Should you want to make your own, or check the unmarked cables you have on hand to see if they are wired correctly for use with NovaServer, use the table below.

Mac pin	Modem pin	Signal Name
1	4	RTS
2	5	CTS
3	2	TxD
4	7	GND
5	3	RxD
7	8	DCD
8	7	GND

Pin 20 and pin 6 on the modem end of the cable should be shorted together (connected to each other), driving the DTR on the modem high to prevent the modem from being hung up when DTR goes low.

CHAPTER TWENTY CABLE CONFIGURATION

20.1 Introduction

The purpose of this chapter is to provide information on how to configure the cables for the NovaServer system. This chapter is divided into two sections: 20.1 Introduction and 20.2 Cable Configuration. The Introduction section provides an overview of the cable configuration process, and the Cable Configuration section provides detailed instructions on how to configure the cables for the NovaServer system.

The NovaServer system is designed to be configured for use in a variety of environments. The cable configuration process is a critical part of the system setup, and it is important to follow the instructions in this chapter carefully to ensure that the system is configured correctly.

Port	Configuration
1	...
2	...
3	...
4	...
5	...
6	...
7	...
8	...
9	...
10	...

The NovaServer system is designed to be configured for use in a variety of environments. The cable configuration process is a critical part of the system setup, and it is important to follow the instructions in this chapter carefully to ensure that the system is configured correctly.

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USER AGREEMENT

- *This Appendix contains a sample User Agreement.*

A User Agreement is a vital tool for protecting yourself in this litigious age. ResNova's legal counsel has reviewed this agreement; however, we suggest that you have your own legal expert take a look at it before putting it into effect on your server. There are places throughout this sample agreement where you should place your own name, rates, and other information about your server, so be sure to read it carefully and make any appropriate changes. (The places where you need to make changes are underlined.)

- *Make sure that the "Disclaimer of Warranty and Limitation of Liability" section is prominently displayed in boldface or all upper-case letters. The law requires that this information stand out and not be hidden among other text where the reader might easily miss it.*

WELCOME!

Thank you for calling Server Name! Before you begin using our system, we ask that you read and agree to our User Agreement, below. This agreement defines acceptable behavior on this service and also advises you of your legal rights and our liabilities. Your continued use of the server means that you accept the terms of this agreement and agree to follow our rules while you are using our server.

If you are under 18 years of age, please have your parent or guardian read this agreement and explain to you what you are and are not allowed to do here. By allowing you to use this server, your parent or guardian agrees to be responsible for your actions.

TERMS OF AGREEMENT

This document comprises an agreement between us (Operator(s), the operators of this server), and you, a user of the Server Name information service operated by Operator(s). In the text that follows, "we" refers to Operator(s), and "you" refers to the user of the service.

By accepting an account on this server, you agree that Operator(s) have made sufficient effort to inform you of the terms and conditions of the use of this server and to be bound by the terms of this agreement as long as you continue to use this server. This agreement expires when you allow or request the cancellation of your account, or when your account is cancelled by us for violation of any term of this agreement. This agreement supersedes any previous agreement made with regard to the use of this server.

If the user is a minor, the user's parent or guardian agrees to be bound by the terms of this agreement and to be held responsible for any violations committed by the user. The parent or guardian of the minor user accepts that the system operator makes no effort to ensure that the information, files, and other resources made publicly available on the server are appropriate for minors, and agrees to be solely responsible for monitoring and controlling said user's access to material on this server that the parent or guardian deems inappropriate for the user's age and maturity level.

The provisions of this agreement are governed by the laws of the state of State.

WHAT IS ACCEPTABLE BEHAVIOR?

Because we believe in the First Amendment, it is our intention to limit the free exchange of ideas as little as possible. However, in any society, it is necessary to have some ground rules, especially since this server exchanges messages with the Internet, which has rules of its own. Even the First Amendment does not allow one to falsely cry *Fire!* in a crowded theatre. Virtually any behaviour is acceptable *except for* the following:

- **Personal remarks** directed toward specific users of this server, including sexist or racist insults. If you do not agree with what someone says, attack their ideas, not their person. If you cannot prove the correctness of your beliefs by objective, rational argument, then perhaps the ground you're standing on is itself a little shaky. If you are the target of such remarks, we suggest you ignore the user and notify the system operators. Do not attempt to get even or start a flame war.
- **Harassment.** Harassment is defined as repeated hate messages or sexual advances, in public message forums or in electronic mail, that continue after the recipient has requested that such messages cease. If you receive messages with harassing content, first request that the sender not send any such further messages. If the harassment continues, report the offender to the system operator. Again, do not attempt to get even or start a flame war.
- **Commercial advertising** in non-commercial message forums, Usenet newsgroups, or electronic mail. This server (and the Internet it's connected to) is not your private advertising forum. Many users object to receiving advertising they did not request. The offense is compounded when you post a large number of messages, especially to areas that are not related to the topic of the advertisement (this is called *spamming*). Most users do not object to a *brief* public announcement of a new product or service, with information on how to obtain more information, assuming it is appropriate for the topic of the message forum or newsgroup it is posted to. If you receive unsolicited advertising in electronic mail, report the offender to the system operator.
- **Chain letters or pyramid schemes.** In most cases, these are illegal (yes, the famous Make Money Fast pyramid scheme *claims* to be legal, but it is not) and in other cases (such as "FCC modem tax," "Good Times virus," and "Boy dying of cancer wants cards for world record attempt," which have been circulating for years) contain erroneous or obsolete information. Whether they are legal or not, they waste valuable resources and should be avoided.

- **Off-topic messages.** Every message forum and Usenet newsgroup is devoted to a particular subject. Some topic drift inevitably occurs, especially in areas with broad definitions, but we request that users make an effort to remain on topic as much as possible. When posting to Usenet newsgroups, make sure you have read some messages in the group to get a feel for the topics discussed there. If possible, obtain a FAQ (a list of Frequently Asked Questions) about the newsgroup. You might think that `soc.singles` is a great place to post a personal ad—but you'd be wrong. (The newsgroup `alt.personals.ads` is the right place.)
- **Gratuitous profanity.** We realize that, when you are expressing a passionately-held opinion or viewpoint, you may occasionally find it necessary to use strong language to make your conviction felt. This is all right with us—we're all adults here, and we've heard these words before. However, messages with little to offer besides profanity borders on the harassment of every user on this server, and are not tolerated.
- **Libelous material.** It is illegal to distribute material that contains unproven allegations of wrongdoing by individuals, companies, or other organizations—on this server or any other methods. This is considered libel and can be prosecuted—not by us, but by the wronged party. (Accused criminals are innocent until proven guilty.) If you believe a libelous statement about you or your organization has been posted on this server, please contact the system operators. We cannot be held liable for libelous statements posted on this server until we have been notified of their nature.
- **The planning or commission of illegal acts,** including, but certainly not limited to, software piracy—see *Uploading and Posting Files*, below.
- **Any attempt to defraud** us or other users of this server, including, but not limited to, providing fraudulent address, phone number, or billing information; obtaining multiple accounts for the use of a single user with intent to deceive; representing oneself as a system operator to other users; decompiling or modifying the NovaTerm software; or attempting to hack the system.

We reserve the right to delete inappropriate messages and files (or move them to another section of the server), including messages that may not specifically violate any of the above restrictions but that clearly violate their intent. Any user whose messages are deleted or moved will be informed of the reasons for this action. Repeated violations may be cause for termination of your user account. Termination is at the sole discretion of the system operator.

We also reserve the right to inspect any user's electronic mailbox for evidence of violation of any of these guidelines if, in the sole opinion of the system operator, there is sufficient evidence to do so (such as a complaint from a user about harassment, or commercial software found in the server's mail attachments folder). We do not monitor electronic mail during the routine operation of the server, although we may also occasionally do so for troubleshooting purposes.

Even if Operator(s) fail for any reason to take action against a user for a violation of the above guidelines, this inaction will not diminish the enforceability of that or any other guideline in other instances. We also cannot be held liable for the content messages posted by the users of this server. When notified of the illegal nature of a message, the system operators will make reasonable effort to determine the validity of the claim and take appropriate action.

UPLOADING AND POSTING FILES

We accept and respect U.S. copyright law and the Berne Convention. For this reason, illegal distribution of software or other copyrighted materials (commonly referred to as piracy in the case of software) is not permitted on this server. This means that:

- You may upload software marked as, or clearly intended to be, freely distributable (demonstration versions of commercial software, public domain software, freeware, shareware). You may not upload commercial software or pre-release (alpha or beta) versions of commercial software, or any other software for which the explicit permission of the copyright holder (usually the author or the publisher of the work) has not been obtained.

- You may not upload text, graphics, sounds, or other data files containing creative work without the permission of the copyright holder (usually the author or the publisher of the work). Derivative works belong to the owner of the original material. If you digitize a sound from an episode of *Star Trek: The Next Generation*, for example, Paramount Pictures (the owner of *Star Trek*) owns that file, even though you converted the sound to computer format. Therefore, you cannot upload that sound to this server.
- Even when an author has given blanket permission to distribute a file, or when the file has been published in a venue (such as in a Usenet newsgroup) that could be construed as providing implicit permission to copy the material freely, we encourage users to get explicit permission and to fully credit the creator of the material whenever possible. For one thing, the person who posted the material on Usenet may not be the author, and may not have the proper permission himself. Remember that, under revised U.S. copyright law, even material that does not contain a copyright notice is not necessarily in the public domain.

The act of uploading copyrighted material is considered a statement that you have permission to do so. Due to the volume of files uploaded, we can not be held responsible for copyrighted material improperly made available to users, even though we may look for and remove such files from the system from time to time. When notified of the illegal nature of a file, we will make reasonable effort to determine the validity of the claim and take appropriate action.

Files uploaded or posted in violation of these guidelines may be deleted, and repeated violations may result in the suspension or termination of your user account, at our sole discretion.

DISCLAIMER OF WARRANTY AND LIMITATION OF LIABILITY

All software, files, and messages published on this server are provided "as is," without warranty of their quality, merchantability, fitness for any particular purpose, regardless of any other written or oral warranty, either express or implied. In no event will Operator(s) or ResNova Software, Inc. be held responsible for any direct, indirect, special, incidental, or consequential damages arising from any defect in the information or software downloaded from this server, including damage to property, and, to the extent provided by law, damage for personal injury, nor for any such damages arising from the use of the NovaTerm software or documentation, even if Operator(s) and/or ResNova Software, Inc. have been advised of the possibility of such damages. While Operator(s) may make reasonable efforts to ensure that software made available on this server works properly and is free of viruses, Trojan horses, and other potentially damaging software constructs, the existence of these efforts may not be construed as a guarantee that said software is actually functional under all circumstances and/or free of viruses, Trojan horses, and the like.

Liability under this agreement is limited to one month's service charges.

Some states do not allow the exclusion or limitation of implied warranties or of liability for incidental or consequential damages, so the above limitations or exclusions may not apply to you.

CHARGES AND BILLING

Users of this server are charged according to the following fee schedule:

Fee Schedule

Setup charges, along with the first month's monthly charge, must be paid before account activation. Monthly charges are payable in advance for the month they cover. Hourly charges are payable at the beginning of the month following the month they are incurred. All charges are non-refundable. Charges may be paid in advance; any unused usage credit will be refunded upon request. Non-payment or fraudulent use of your account may result in termination. In the event of a billing dispute, a bounced check, or a refused credit card charge, your account may be partially or completely suspended while the dispute is resolved.

COMPILATION COPYRIGHT

The files, messages, and other resources on this server are copyrighted by their individual authors, creators, or publishers. Operator(s) claim no copyright on the individual pieces of information (messages and files) provided by users of the server. However, we do claim a compilation copyright on this information, which means that you are prohibited from copying large portions of the content of the server, particularly for the purpose of setting up your own server. The operators of this server also claim a copyright on the unique design elements of the server (including graphics, sounds, and text) that they created. These copyrights are communicated by the following message, which appears at every sign-on:

Server design and content copyright © 1995 Operators. Individual copyrights on user-contributed files and messages are respectfully acknowledged. NovaServer and NovaTerm software copyright © 1995 ResNova Software, Inc.

GLOSSARY

.....

10-base T. An Ethernet medium that uses standard twisted pair (telephone) wiring.

56K. A dedicated digital phone line with a **bit rate** of 56 kilobits per second.

access group. A collection of user accounts (or other groups) that were put into the group in order to give them access to a particular server component.

access level. Each account has an access level, which determines the parts of the server the user can access and what functions he or she can perform. A NovaServer access level consists of four numbers from 0 to 1000. For the user to access a particular feature, each field in a user's access level must be greater than or equal to the corresponding field in the required access level. The higher the number, the greater the privilege of the user.

account. An individual's identity on the server. Each account (except **guest accounts**) has its own private electronic mailbox.

account server. An **ODBC**-compliant database server that stores account information shared among a number of NovaServers—the heart of a **virtual server** system.

account ID. The name by which a user identifies themselves to NovaServer. This name may or may not be the person's real name. To prove their identity, users must also provide their **password**.

ANSI (American National Standards Institute). An organization that defines various standards in the technology industry. In telecommunications, *ANSI emulation* usually refers to a terminal emulation standard, based on **VT100**, that supports clearing the screen, cursor movements, colors, and a graphics character set.

AppleSearch. A software package, published by Apple, which provides quick searching of collections of documents and also allows access to Internet-based WAIS servers. NovaServer can be an AppleSearch client.

AppleTalk. The standard Apple networking protocol, built into every Macintosh. It is important to distinguish between the protocol (AppleTalk) and the physical wires (**LocalTalk** or **Ethernet**). AppleTalk is the language spoken by the computers to each other; LocalTalk or Ethernet is the medium on which the exchange of information takes place. LocalTalk and Ethernet can both carry AppleTalk information, and AppleTalk can co-exist with other network protocols like **TCP/IP** and **IPX/SPX**.

auto-answer mode. A modem in auto-answer mode answers the phone when it rings. (The number of rings is usually selectable.) NovaServer does not use auto-answer mode; instead, NovaServer listens for a RING message from the modem and only then instructs the modem to answer the phone. This way, the modem will not answer a call when NovaServer is not running.

bandwidth. The data throughput capacity of a network connection, measured in **bits per second**. Multimedia applications such as real-time videoconferencing require a high-bandwidth connection between the two sites involved. Modem connections (even 28,800 bits-per-second connections) are considered low bandwidth; usually, ISDN is considered the slowest high-bandwidth connection. You may also hear the term *wasting bandwidth*, which refers to sending useless or unimportant data over the Internet, ostensibly using up bandwidth that could instead carry more useful information.

baud. (1) A unit of data transmission speed; the number of discrete signal-state changes (signal events) per second. Sometimes, but not always, equivalent to *bits per second*. A 2400 bps modem, for example, transmits data at 600 baud, with sixteen different types of signals, thus transmitting four bits per signal event for a total of 2400 bits per second. Compare to **bit rate**. (2) The maximum speed at which data can be sent down a channel, such as a telephone line; often confused with the actual speed at which the data is transmitted between two computers, measured in bits per second.

BBS. *see* **bulletin board system**.

bit rate. The speed at which bits are transmitted, usually expressed as *bits per second*, or *bps*. Modern modems can use data compression to increase their effective bit rate. Compare to **baud**.

bits per second. *see* **bit rate**

board. *see* **bulletin board system**

browser. A program whose purpose is to request and display **World Wide Web** documents. Graphical browsers can display not only **HTML** documents but also graphics, sounds, and other types of media, including **hotlinks**. NovaTerm, the NovaServer client software, contains an integrated graphical browser.

bulletin. A short message sent to another user. *See also chat.*

bulletin board system. An older name for **information server**. Generally, bulletin board systems are less-capable information servers geared largely toward hobbyists.

Butler.TM An ODBC-compliant database server from Butler Technologies that runs on the Macintosh. Butler makes an ideal **account server**.

carrier. A tone a modem continuously emits in order to assure the other modem that the connection is still valid. When the carrier is lost, the connection ends.

channel service unit and data service unit. Two devices (often combined into one unit) that connects a router or other network device to a high-speed digital line, such as a **56K** or **T1** line. Required for all dedicated digital connections.

chat. An interactive conversation between two or more users. *See also conference and bulletin.*

client. (1) A computer that is connected to a server or a host computer, acting as a terminal or as a more active participant in the communications process. (2) Software designed to work a particular host or type of host. (**NovaTerm** is a client for NovaServer.)

client interface. How NovaServer appears to the caller. NovaServer supports several different client interfaces, including text (TTY, VT100, and ANSI), Remote Imaging Protocol (RIP), and NovaTerm graphical client software for Macintosh and Windows.

Communications Toolbox. Apple's technology for supporting different types of communication links, file transfer protocols and terminal emulations in a consistent, easy-to-use fashion. A program that uses the Communications Toolbox can be extended to use new connection types, protocols, and emulations simply by installing the proper tool file in the System Folder. Any program that uses the Communications Toolbox can use any tool. Both NovaServer and NovaTerm support Comm Toolbox communication tools.

dial-up. A service that is accessible with a phone call, with a modem or ISDN line. Compare to **dedicated line**.

dedicated line. A telephone line that runs directly from one site to another site. For example, if you had a dedicated Internet line, the line would be connected from your home or office to your Internet provider. Most telephone companies offer **56K** and **T1** dedicated lines.

destructive backspace. A backspace that erases characters as the cursor moves backwards. Some computers do not use destructive backspaces—the cursor only moves to the left while the characters it passes remain on the screen—in which case NovaServer needs to erase characters as a separate operation.

distribution list. A list that identifies the servers a message forum or file library should distribute new messages and/or files to. Distribution lists are central to the **InfoLink** networking protocol.

DNS. *See domain name service.*

domain name. A unique name that identifies your server on the Internet. NovaServer needs to know your Internet domain name to send and receive Internet mail. A server can receive mail for up to four different domains, but all mail sent from that server is marked as originating from the server's primary domain. It is best to use domain names when referring to other Internet servers, because the operators of these machines may change the actual network address but usually keep the same domain name.

domain name service. An Internet service that translates names (such as resnova.com) to numeric addresses (such as 204.74.76.11). Your Internet provider should provide authoritative DNS for your domain (telling the rest of the Internet about your domain) and also provide a DNS server that your computer can query to find out the network address of any host.

download. Copying a file from a **host** computer to a **client** computer.

encryption. A security scheme that scrambles a message so that only the intended receiver can understand it. NovaServer uses the Internet-standard MD5 encryption to transmit user names and passwords, ensuring that Internet hackers can't steal them. For electronic mail security, a program called PGP (Pretty Good Privacy) can be used to prevent unauthorized users from eavesdropping.

event. A scheduled task that NovaServer performs automatically. NovaServer events include automatic backups, connecting to other servers, processing newly received messages and files, and so forth.

Ethernet. A network system, invented by Xerox, that allows computers to talk to each other at 10 megabits per second. Ethernet is the network of choice for high-demand applications like providing Internet access to an entire LAN, or connecting several NovaServers into a **virtual server**. Ethernet may be used on two different types of wiring, **10-base T** and **thin Ethernet**.

external application. A program designed to run inside of NovaServer to extend its capabilities. External applications (or just Externals for short) are stored inside the NS External folders and can be invoked by a server component, a script statement, an event, or by the transmission of information through a gateway. ResNova Software maintains a list of currently available third-party externals. Documentation for writing your own is included with the full NovaServer installation.

file library. A NovaServer component that stores files and their descriptions. The listing of files can be viewed and searched by callers to allow users to find the specific file they wish to download. By creating a set of file libraries you can categorize the files available on your server.

File Transfer Protocol. An Internet client/server protocol for transferring files between Internet-connected computers. Some FTP servers allow anyone to access their files by logging in as *anonymous*.

frame relay. A relatively new network protocol that can provide high-speed access to the Internet and other network without an expensive dedicated line. Essentially a high-speed packet-switching network.

FTP. *See File Transfer Protocol.*

gateway. On the Internet, the device (usually a router) that connects your network to the rest of the Internet. Information destined for a site not on the local network is sent through the gateway. In NovaServer, the term refers to a method of communicating with another computer. NovaServer has built-in gateways for InfoLink, NNTP, and SMTP protocols, as well as third-party gateways that support UUCP, QuickMail, and others.

graphics. NovaServer's ability to display icons, pictures, and shapes and to respond to mouse clicks. Graphics work only with NovaServer's client software, **NovaTerm**.

group. a collection of individual accounts and/or other groups that can be used for electronic mail addressing, access privileges, or both.

handle. A nickname for a particular user. NovaServer uses handles (also known as screen names) as account IDs.

hardware handshaking. The wiring in a serial cable that allows the computer to tell the modem to stop sending data so that the computer has time to process it (and vice versa). Especially at speeds above 2400 bps, a hardware handshaking serial cable is vital to the error-free exchange of data.

Hayes-compatible modem. A modem that understands a set of commands based on the standard created by Hayes Microcomputer Products, Inc. All of these commands begin with the character sequence AT (short for *attention, hey you, modem, listen up*), so such modems are sometimes referred to as *AT-compatible* modems.

home page. The main HTML document for a particular individual, company, or other organization. The home page usually contains general information about the person or company, along with **hotlinks** that retrieve additional related information. ResNova's home page is at <http://www.resnova.com/>. Many of our employees have individual home pages of their own, which are accessible from ResNova's home page.

host. A computer running server software that allows users on other machines to access files or information stored on that machine.

hotlink. A **hypertext** link to another document embedded in an **HTML** document. Clicking a hotlink in a document is a way to pull up additional information on whatever you're reading about. For example, if you were reading a review of a new product released by Microsoft, clicking the word `Microsoft` might take you to Microsoft's **home page**.

hot menus. A hot menu does not require that a Return character be pressed after a choice is made.

HTML. *see* **HyperText Markup Language**.

HTTP. *see* **HyperText Transfer Protocol**

HyperText Markup Language. A standard way of defining **hypertext** documents. HTML documents define the structure of a document (this is a header, this is body text, this is a quote from another work) and allow the **browser** to determine the presentation. HTML documents can include images, sounds, and, most importantly, **hotlinks** to other documents on the World Wide Web. NovaServer uses HTML internally in all text resources, allowing all mail, messages, and other text to contain hotlinks.

HyperText Transfer Protocol. The protocol by which documents are requested from servers on the World Wide Web. NovaServer uses HTTP to send data to the NovaTerm client software and to request information from other NovaServers and Internet servers. Similarly, Internet users can access some of NovaServer's resources using an HTTP client called a **browser**.

idle timeout. The amount of time an on-line account can be inactive before NovaServer terminates the connection. Each node has its own idle timeout. You can also set idle timeouts for the log-on process.

InfoLink. A store-and-forward protocol that allows NovaServers to exchange electronic mail, messages, and files through a network or over periodic modem calls on ordinary phone lines. InfoLinked servers form a network independent of any other network connections the servers may have. ResNova sponsors a network of servers called NovaWorld, which all NovaServer operators are invited to participate in.

information server. Software that links individuals together and that offers a wide range of information resources, including electronic mail, public message forums, file libraries, real-time chats and conferences, and Internet resources.

Integrated Services Digital Network. A type of high-speed digital switched telephone line available in most areas of the United States and some other countries. ISDN supports two independent 64,000 bits-per-second channels that can be used simultaneously for voice or data. Using both together in a process called bonding allows data rates of up to 112,000 bits per second. Unlike dedicated lines, ISDN connections are dialed just like regular phone lines.

Internet. The world's largest functioning anarchy. No one entity owns the Internet; no one entity operates it. The Internet is simply a group of computers that use standard protocols (among them **TCP/IP**, **NNTP**, **SMTP**, and **HTTP**) to exchange information. Originally founded and funded by the U.S. Department of Defense, then later operated by the National Science Foundation, the Internet was privatized in the late 1980s and is now available to almost anyone who wishes to take advantage of it. As more and more people connect to the Internet, more and more organizations see the advantage of making information or services available through the Internet—which convinces more and more people to connect to the Internet, and so on. As of this writing, recent estimates put the number of Internet users around the globe at around 25 million.

Internet provider. A company that sells you a connection to the Internet. Since the Internet is not owned by any one company, there are a number of national, regional, and local companies from which you can buy Internet access. The local companies usually buy a high-speed dedicated line from a larger provider (such as Sprint or PSI) and resell the **bandwidth** in smaller chunks, such as **dial-up** modems, **ISDN** or **56K** dedicated lines. Usually you must lease the **dedicated line** separately; the Internet provider deals only with moving data, not connecting the lines.

IP. *See* **TCP/IP.**

IP address. An address, expressed in dotted decimal form, of a machine on a TCP/IP network or the Internet (for example: 204.74.76.11). You must know the IP address of an Internet host to connect to it, or else have access to a **DNS** server to automatically translate easy-to-remember **domain names** to their corresponding IP address.

ISDN. *See* **Integrated Services Digital Network.**

LAN. *see* **local area network.**

leased line. *see* **dedicated line.**

library folder. A folder on a Macintosh volume that contains the individual files stored in a file library.

line editor. NovaServer's editor for VT100, TTY and RIPScrip callers.

listing. A listing displays the contents of a **text resource.**

local. A local node is one that is used to connect to the server using client software running on the host. If you wanted to log on to NovaServer from the same computer that is running the server, you would log on through a local node.

local area network. A group of computers all at one site that share resources. Common LAN-shared resources include printers and disk space. NovaServer fits easily into LAN environments (such as those in many corporations and schools) by letting LAN users access the server using AppleTalk or TCP/IP protocols.

LocalTalk. The networking hardware built into all Macintosh computers that allows them to talk to each other and to networked printers and file servers through the computer's printer port. *See also* **AppleTalk** and **Ethernet.**

log. *see* **userlog** and **errorlog.**

log off. To disconnect from the server. As a noun (logoff), the process of disconnecting from the server.

log on. To connect to the server by providing an account name and password. As a noun (logon), either the process of connecting.

MacBinary. A special addition to any file transfer protocol that allows Macintosh applications be transferred with the proper creator, file type, and other file attributes. (Normally these attributes would be lost, since standard file transfer protocols were not designed specifically for the Macintosh.)

MacTCP. The software that allows Macintosh computers to use the **TCP/IP** protocol.

master site. The site that manages and keeps master copies of the contents of a distributed message forum or file library. All new messages and files are sent to the master site before being distributed to other sites.

menu. A list of choices for performing tasks on the server. The server itself, like every Macintosh program, has a series of pull-down menus for controlling the server's operation. NovaServer's menu editor allows you to design a menu structure for the information resources on the server and to create your own custom user interface for remote access to those resources. These menus can be icons (**NovaView**), text, buttons, or **hypertext**.

message forum. Message forums are your server's bulletin boards for debate and discussion. Users can post questions, answers, facts, and opinions, either starting a new discussion or replying to an existing one. For easier reading, NovaServer keeps threads, which are all the replies to a single message, listed together.

MNP 4. Microcom Network Protocol level 4, the old standard for error correction between two modems. *See v.42.*

MNP 5. Microcom Network Protocol level 5, the old standard for data compression between two modems. Modems that support MNP 5 can transmit compressible data at up to four times their connection rate. *See v.42bis.*

modem. Short for *modulator/demodulator*; a serial peripheral device that links your computer to other computers and information services using ordinary telephone lines.

modem command. An instruction from a computer system that directs a modem attached to the computer to perform some immediate action. Most modem commands begin with the letters AT.

modem port. One of two serial interface ports on the Macintosh computer, marked by a telephone handset icon.

moderator. A user or group that has the ability to maintain a file library or message forum, including the power to delete messages and release files.

multitasking. A process that allows a computer to perform two or more tasks simultaneously. Most multitasking is done through time-slicing: the computer's processor switches between the assigned tasks several times a second, creating the illusion that several things are happening at once. The Macintosh has built-in multitasking that allows you to run several programs simultaneously. NovaServer uses a different, more efficient, multitasking scheme to allow the software to handle multiple users and tasks simultaneously.

multi-user. (adj.) Characterizes a mode or ability of an operating system or server to support several people using the same computer at once. NovaServer is a multi-user server, even though the Macintosh is generally considered a single-user computer.

network. Any group of computers that have agreed to exchange information. In some cases, the computers are all in one place and are connected together into a **local area network**. In other cases, a Wide Area Network is used to connect computers in geographically distant areas. A store-and-forward network, such as **InfoLink**, can be used to network computers that are not connected on a full-time basis.

Network News Transfer Protocol. The primary protocol by which Usenet newsgroups are propagated throughout the world. NovaServer speaks NNTP, allowing you to bring newsgroups into your NovaServer.

newscan. To survey the entire server for new messages and files that were added since the last time a newscan operation was performed. A quick way of getting up-to-date on new additions without having to navigate to each part of the server.

newsgroup. A Usenet discussion forum, distributed to millions of readers around the world. Over 10,000 newsgroups are available on every imaginable topic, from sex to SCSI, from Unix to Macintosh, from writing to stamp collecting, from religion to politics. NovaServer can speak the **NNTP** protocol, allowing you to carry Usenet news on your server.

NNTP. *see* **Network News Transfer Protocol.**

node. A port through which users connect to NovaServer. Nodes may be connected to actual physical devices (such as modems) or they may merely be software ports (such as TCP/IP nodes, which are used by Internet users).

NovaScript. NovaLink Professional's built-in scripting language for customizing text and graphic displays.

NovaServer. The premier information server for the Macintosh. But then, you already knew that, because you bought one.

NovaTerm. ResNova's telecommunications companion to NovaServer. NovaTerm lets you enjoy your computer's graphical user interface while accessing the server through simple point-and-click operation.

NovaWorld. A global network of NovaServers that exchange electronic mail, messages, and files. Every NovaServer operator is invited to join NovaWorld.

ODBC. *see* **Open Data Base Connectivity**

Open Data Base Connectivity. A standard developed by Microsoft that allows applications to store and retrieve information in high-powered database servers, regardless of what type of software or hardware is being used. Oracle, Sybase, Access, and **Butler** are all ODBC-compliant database servers.

Open Transport. A relatively new software technology from Apple that will eventually replace MacTCP, AppleTalk, and other network software with a single programming interface.

operator interface. The interface the system operator uses to configure NovaServer—what you see when you sit down in front of the computer that is running NovaServer.

packet. The largest piece of data that can be transmitted over a network. When a message must be transmitted to another computer, it is first broken down into packets. The packets may take different routes to the destination, where they are re-assembled in the correct order and passed to the destination computer.

packet-switching network. A network that breaks messages up into **packets** and transmits them through a high-speed network. Instead of having a dedicated connection from the source to the destination, the network connection is shared with many other users. SprintNet and MCI Xstream (Tymnet) are two well-known dial-up packet-switching networks which use a protocol called X.25; users can call into a local SprintNet or Xstream **point of presence** and connect to any machine on the network (such as Delphi or America Online). **Frame relay** and the **TCP/IP** are two other types of packet-switching networks.

password. A secret sequence of letters and other characters used to validate a user. Passwords prevent unauthorized access to a user's account. If only the owner of an account knows the associated password, then the server can determine with reasonable security whether a user is who he claims he is.

pathname. A description of a file's location, starting with the name of the root directory (usually the hard drive) and including all the other folders that the file is inside, separated by colons. An understanding of pathnames is necessary only if you maintain server files in folders other than NovaLink Professional's folder.

Point of Presence. A location in which a particular service is available. For example, the SprintNet **packet-switching network** has POPs across the country. If you live within a the local calling area of a SprintNet POP, you can access any host on SprintNet for the price of a local call plus network charges, which are much less expensive than a long-distance phone call. National and regional **Internet providers** also usually have POPs that determine where their service is available with a local call.

Point to Point Protocol. A protocol, similar in concept to **SLIP**, for connecting a computer to the Internet with a serial connection, such as a modem. PPP has several technical advantages over SLIP but may be more difficult to configure.

POP. *See* **Post Office Protocol** or **Point of Presence**.

Post Office Protocol. A protocol that allows an Internet mail client (such as Eudora or Pine) to connect to an Internet provider and retrieve electronic mail from the user's mailbox.

PPP. *see* **Point to Point Protocol**

private server. An information server on which members of the general public may not establish accounts. Accounts on a private server must be established by the system operator.

provider. A company that provides network services. *See* **Internet Provider.**

remote (adj). Accessing a computer or server over a network or telephone.
Compare with **local.**

Remote Imaging Protocol. A popular telecommunications standard, developed by TeleGraphix Communications, that allows an information server to display graphics on a caller's screen.

ResNova Software, Inc. A company located in Huntington Beach, California that produces exceptional information server (and surfer) software.

RIP. *See* **Remote Imaging Protocol.**

router. A device that connects two or more networks together (often with support for translating one protocol into another). For example, you use a router to connect your local area network to the **Internet.**

screen name. *see* **handle.**

script. A text resource containing text displayed in a specific part of the server. For instance, the Logon script is displayed when the connection to the server is made, but before the user logs on. Each menu also has its own script that is executed when that menu is accessed. Scripts can contain **NovaScript** instructions to customize the display of this text or graphic user interface.

Sigop. *see* **moderator.**

Simple Mail Transfer Protocol. The protocol by which electronic mail moves around on the Internet. NovaServer can act as a full-fledged SMTP server, allowing your users to exchange mail with Internet users.

site. A computer participating in a network. As a NovaServer operator, you can participate in NovaWorld (a worldwide network of NovaServers connected by **InfoLink**).

SLIP (Serial Line Interface Protocol). A protocol that allows **TCP/IP** to run over a serial connection, such as a modem. A SLIP connection with an Internet provider connects your computer to the Internet.

SMTP. *see* **Simple Mail Transfer Protocol**

status window. The window in which NovaLink Pro displays current server activity, memory use and server load.

supervisor. The site immediately upstream from your server in the InfoLink hierarchy. Your server should connect to its supervisor on a regular basis to ensure that mail, messages, and files flow through the network in a timely fashion.

survey. A **script** that asks a user a series of questions and writes the answers to a file. *See also* **voting topic**.

Sysop. *see* **system operator**.

system operator (Sysop). The individual who runs a NovaServer. The system operator is responsible for verifying users, checking uploaded files, and other tasks associated with running an information server. The system operator may delegate some of these tasks to co-sysops, assistants, or **moderators**.

T1. A special dedicated digital phone line that can transmit up to 1.53 megabits of information per second.

telco. Your local telephone company.

terminal server. A device that allows serial peripherals to be shared across a network. For example, a terminal server with a number of modems connected to it can be used to route incoming calls to TCP/IP **nodes** on a NovaServer.

thin Ethernet. An Ethernet medium that uses coaxial cable similar to the cable used by cable television. Sometimes known as thin coax or ThinNet.

thread. A group of related messages, usually an initial message and a number of replies or follow-ups.

TCP/IP. Two separate standard protocols (Transmission Control Protocol and Internet Protocol) that allow computers to exchange information in a standardized fashion. Most computers have software available to support TCP/IP. The MacTCP control panel is TCP/IP software for the Macintosh. TCP/IP is the standard protocol used to communicate with the Internet.

telnet. The Unix command that initiates a text-mode connection to a server over a **TCP/IP** connection. By extension, the word *telnet* is used to refer to any text-mode Internet connection or program (on any computer) that follows the protocol established by the Unix telnet program.

text resource. *see* **script**.

toggle. Switching on or off. Toggling is a flip-floppy operation. Toggling something that's off turns it on; toggling something that's on turns it off. Macintosh checkboxes are toggle switches.

tree. Internally, NovaLink Professional organizes all its messages, file libraries, message forums, conferences in a hierarchical structure that, if you drew it on paper, would look like an upside-down tree. The word *tree* can refer to this internal structure, or it can refer to the server component that allows you to access this structure.

TTY. A simple no-frills terminal mode. Short for teletype, a terminal that actually prints messages on paper rather than on a video terminal. Early video terminals emulated the printing-on-paper model.

Uniform Resource Locator. The standard method of specifying the location of a document on the **World Wide Web**. Each URL states the access protocol (available protocols include HTTP, FTP, Gopher, and more), the name of the server containing the resource, and the path to the resource on that server. Every component of a NovaServer has a URL.

URL. *see* **Uniform Resource Locator**

Usenet. The global soapbox, which distributes messages in over 10,000 **newsgroups** to Usenet news servers all over the world.

userlog. A text file containing a record of user activity on your server. Each **node** maintains its own userlog.

UUCP. Short for Unix-to-Unix CoPy. A protocol, originally intended for copying files from one Unix machine to another, since adapted to exchange electronic mail and newsgroup messages for computers that do not have a dedicated Internet connection. A UUCP gateway is available for NovaServer.

v.32. The world standard for 9600 bits-per-second modem transmission.

v.32bis. The world standard for 14,400 bits-per-second modem transmission.

v.34. The world standard for 28,800 bits-per-second modem transmission.

v.42. The world standard for error correction between two modems. Modems that support v.42 are highly reliable for transmitting data without errors because they can detect and retransmit data that was garbled during the initial transmission. Backward-compatible with the MNP 4 standard.

v.42bis. The world standard for data compression between two modems. Modems that support v.42bis can transmit compressible data at up to four times their connection rate. (Compressible data includes standard text information but not files that have been compressed by Stuffit or another archive program.) Backward-compatible with the MNP 5 standard.

v.FC, v.Fast. Non-standard 28,800 bits-per-second modem protocol introduced during the period in which the v.34 standard was being ratified.

validate. *see verify.*

verify. To confirm the identity of a user. Unless you are running a **private server**, you should verify your users before granting them higher **access levels** to discourage obnoxious messages, illegal software uploads, and other bad behavior. Some system operators go so far as to actually call each new user on the phone to make sure that the information on the server is accurate.

virtual server. Several NovaServers, all on the same **local area network**, that appear to the user as a single large server. This is made possible by NovaServer's support of World Wide Web protocols, which allow users to request resources not stored on the physical machine they are connected to.

voting topic. A server component that presents a survey question and a series of possible answers. Users can answer the topic and then view the current results.

VT100. A type of terminal emulation that supports cursor movement and clearing the screen. VT100 is a more sophisticated standard than **TTY**. *See also ANSI.*

WAIS (Wide Area Information Server). An Internet-based searchable collection of documents much like an AppleSearch server, except bigger and faster, and accessible by anyone in the world through the Internet. Users of WAIS databases can enter keywords, then read, download, or print documents that match those keywords to varying degrees.

word wrapping. The process of automatically moving text to the next line when the end of the current line is reached. Word wrapping eliminates the need to place a Return at the end of a line of text.

World Wide Web. The global collection of multi-media servers accessible through **Uniform Resource Locators (URLs)**. Documents on one server can contain **hotlinks** to documents on any other server.

wrapping. *see* **word wrapping**

WWW. *see* **World Wide Web**

Xmodem. The first successful file transfer protocol, developed by Ward Christensen. Xmodem transfers files 128 bytes at a time and requires that each chunk be acknowledged before the next packet is sent. On slow networks or high-speed modems this becomes inefficient. In an effort to overcome some of Xmodem's limitations, some implementations added 1024-byte or even 4096-byte packets and CRC error checking. Ymodem was created to consolidate these enhancements into one standard protocol.

Ymodem. An updated version of Xmodem that uses larger packet sizes (4096 or 1024 bytes rather than 128), more sophisticated error detection (CRC instead of simple checksums), and batch features that allow multiple files to be selected and transferred all at once.

Zmodem. A high-speed streaming file transfer protocol developed by Chuck Forsberg. Instead of waiting for each packet to be acknowledged before sending the next, Zmodem can send several packets before it expects to see any acknowledgements. With Zmodem, the transmitter is almost always sending data continuously. Zmodem also offers batch features, sophisticated error trapping, and auto-resume features, making it today's protocol of choice.

A

A 234, 307
 About This Macintosh 15, 30
 acceptable behavior 330-333
 acceptable use policy 106-108, 140, 329-336
 Access Levels panel 118-119, 256-257
 access groups 56, 96-99
 see also *groups*
 access levels 56, 96-99, 117-119, 127, 161, 256-257
 for moderators 141
 in NovaScript 275
 Account Record window 126-128
 Account Records window 38, 120, 125, 263
 Account Usage panel 255
 account confirmation 106-108
 account expiration 117, 130
 account licenses 129
 account management 115-134
 account options 116-117
 account server 174-176
 account server 257-258
 Accounts file 315
 Accounts panel 116-117, 254-255
 accounts 115-130
 adding 40-42, 120-121, 123-124
 aliasing 42
 deleting 130-131
 editing 38-40, 125-126, 158-159
 guest 121-122
 validating 123-124, 156-157
 adding accounts 40-42, 120-121, 123-124
 adding groups 42-44, 131-134, 159-160
 adding nodes 250-252
 adding components 52-53, 168-169
 ADDRESS 304
 addressing mail 67
 After Dark 22
 aliasing accounts 42
 anarchy 139
 anchors 234, 307

anonymous posting 64
 ANSI 128
 ANSI menu script 96, 99
 Apple Menu Items folder 33
 AppleSearch 79-80, 237-239
 NovaServer option 10
 server component 238-239
 AppleTalk 17
 nodes 35
 NovaServer option 10
 arithmetic operations 277-278
 ask 278
 attached files 64, 68, 317
 attributes 299
 auditing 60
 see also *logs*
 Auto-Backup panel 147-148, 260-261
 Automatic Menu Script 57
 automatic backups 147-149, 260-261

B

B 305
 backcolor 94, 288-289
 backup devices 17
 backup events 148-149, 261
 backups 147-149, 260-261
 BASE 237, 303
 Basic Black 22
 begin auto menus 88, 293
 billing 115
 black 288
 blackouts 152
 block tags 303-304
 BLOCKQUOTE 304
 blue 288
 BODY 301-302
 boolean operations 277
 BR 303
 browser 84
 built-in scripts 294-296
 bulletin 77, 110-111
 bulletin board
 see *message forum*
 business 8

C

cables 327
 cache (Memory control panel) 16
 Cache folder 316
 calling externals 285
 calling scripts 273, 284-285
 carrier detect 327
 censorship 137
 CENTER 305
 CGI 80-81
 Chat Request 69
 chat 69, 70, 249
 CheckVersion 85, 291, 308, 317, 325
 choosing moderators 140
 CITE 304
 clear screen 94, 287
 click oval 90, 290
 click rect 90, 290
 Client Software folder 316
 co-sysops 40, 140
 see also moderators
 CODE 304
 color 94-95, 288-289
 Comm Toolbox nodes 35
 community bulletin board 7
 conditional execution 86-87, 97, 279-281
 Conference 70
 private 69
 Configure Node Settings window 35-37, 209-210
 ConfirmAccount script 106-108
 Connect Out 78, 231-232
 Connect When E-mail Is Sent
 checkbox 193
 constants 275
 containers 298
 converting graphics 320, 323
 copyright 137-138, 143, 333-334, 336
 corporate environment 8
 crashes 152-153
 creating a menu structure 54
 creating accounts 40-42, 120-121, 123-124
 creating groups 42-44, 132, 159-160
 creating nodes 250-252
 CTS/RTS 327
 cursor 94, 287
 custom graphics 84, 85, 89-91, 290, 319-325
 custom installation 25
 customizing menu scripts 83-99
 cyan 288

D

daily time limit 117
 DAT 17, 149
 database 79
 see also account server
 dates and times 265-266, 274-275
 DCD 327
 DD 307
 dedicated Internet line 19
 default.htm 236-237
 definitions 337-353
 defragmenting 151
 delete account 107, 286
 delete requests 198-199
 deleting accounts 130-131
 deleting groups 132, 159-160
 deleting server components 53, 168-169
 Design file 315
 desktop 150
 DIR 306
 directory structure 315-318
 disable aborts 286
 disclaimer 139, 335
 Disconnect 71, 249
 disconnect 107, 286
 Disk Doctor™ 150
 Disk First Aid 150
 disk cache 16
 DiskExpress™ 151
 Display File 72, 90
 display 94, 286
 distribution list 222
 DL 306-307
 dot commands 312-313
 Download File 73
 Download Level fields 58
 download file 289
 download limits 60
 download log 60
 downloading 58-61, 73, 167
 downloading graphics 85, 90
 draw picture 89-90, 290
 draw RIP icon 92, 292
 DT 307

E

E-Mail panel 259
 e-mail
 see mail
 Edit menu 248
 Edit Password 75
 Edit Term 75
 Editing Group window 133-134
 editing accounts 38-40, 125-128, 158-159
 editing groups 132, 159-160
 editing menus 49-54, 168-169

editing scripts 101-102, 160, 272-273
editing server components 53, 168-169
editor 311-314
education 8
electronic mail
 see *mail*
element 299
else 97, 279
EM 305
emulation 287-289
 see also *ANSI, VT100, TTY*
enable aborts 286
end if 86-87, 97, 279
end repeat 281
Energy Star 22
error log
 see *logs*
Ethernet 17
events 145-146, 148-149, 264
 times 265-266
 types 265-266
exit 86-87, 274, 292
exit repeat 282
Expanse™ 21
expressions 277-278
External 65
external URLs 76
externals 65, 80-81, 244, 285, 316

F

fat binary 26
feedback 67
file attachments 64, 67, 317
File Library 58-61, 170-171, 178
file libraries 58-61, 316
 and InfoLink 196-199
 moderating 141-143
 limits 60
 logging 60
 personal 59
 previews 61
 read-only 59
 releasing files 143
 self-maintaining 60
 scanning 73, 74
File menu 247-248
file sharing 241-242
folder as menu 50
folders structure 316-318
FONT 305
forecolor 94, 288-289
foreign languages 102
forum attachments 64, 317
Forum Attachments folder 317
forum
 see *Message Forum*
functions 278, 284-285

G

Gateway options 202, 212
gateway types 191
Gateways panel 202, 212, 258
General panel 252-253
Get URL 70, 75-77, 232-233
graphics 4, 319-320
graphics tags 308
graphics, downloading 85, 90
green 288
groups 131-134, 159-160, 263
 creating 42-44, 159-160
guest accounts 121-122

H

H1-H6 304
handle 127
hard drive checkup 150
hard drive requirements 16
hardware handshaking 327
HEAD 301-302
header tags 302-303
Hide in NovaView checkbox 56
high message number 199, 223-224
home server 178
hotlinks
 see *URLs*
HR 306
HTML 72, 84, 90, 103, 144, 232, 234, 273, 297-309
 document structure 301
 NovaServer overview 6-7
 for menus 90-91, 104
HTML Files folder 317
HTML Gate 80-81
human beings 135
Hurdler™ Hustler™ 20
HyperTalk 271
hypertext
 see *HTML*

I

I 305
idiomatic tags 304-305
idle time
 see *timeout*
if 86-87, 97, 279
IMG 308
import priority 202, 258
indicators 45
Info Source 79
 see also *AppleSearch*
InfoLink 185-205
 address 192, 203
 Internet mail 194-196
 log
 see *logs*

- mail 194
- queue 165-166
- routing 204-205
- sites 186-189
- InfoLink™ file 315
- inline images 308
- input string 287
- input text 287
- insert in log 290
- installation 23-31
 - custom 25
 - standard 24
- internal URLs 76
- Internet 3, 9, 18-20, 144, 194-196, 207-239
 - addressing 216
 - domain names 208, 213, 258
 - mail 208-216
 - site 210-212
- ISDN 18

J

- JPEG 89, 320
- Jump 70, 72

K

- KBD 305
- key equivalent 56
- key file 11, 28-29, 315

L

- launch external 274, 285, 292
- legal issues 136-140
- levels
 - see *access levels*
- LI 306
- liability 138-139, 335
- libel 138, 332
- library
 - see *File Library*
- licenses 129
- line editor 311-314
- List Events window 148, 200, 264, 132
- List Nodes 77
- List Scripts window 101-102, 264, 272-273
- List Sites window 189-190
- list tags 306-307
- List Users 68
- load indicators 45
- local area network 17-18
- local logins 155-156, 270
- local nodes 35, 155-156
- Lock Setup 267
- Lock Site checkbox 193
- lockups 152-153
- Log Options panel 144-145, 260

- logging off 71
- Logon Local 249
- Logon procedure 103-106
- Logon script 105-106
- logs 144-145, 166-167, 247-248, 260, 318
- loops 281-284
- Lynx 236

M

- MacTCP 22
- magenta 288
- mail 318
 - attachments 67, 317
 - pre-addressed 67
 - Internet 208-216
 - queue 165-166
 - reading 66, 164
 - server 259
 - sending 66, 67, 216
- mailbox 66
- mailing lists 42, 131-134, 263
- maintenance 5, 144-151
 - events 145-146
 - remote 155-171
- ManageList script 134
- management 135-144
 - Internet links 144
- master site 196, 222
- math 277-278
- memberOf 97-98, 134, 278
- memory allocation 29-31
- Memory control panel 16
- memory indicator 45
- memory requirements 15, 29-31
- MENU 306
- menu 49
- menu bar 247-270
- menu bar clock 22
- menu editor 49-54, 168-169, 262
 - closing 54
 - opening 49, 168
- menu scripts 57, 83-99, 323-325
 - access levels 96-99
 - ANSI 96
 - NovaTerm 89-90, 98
 - RIP 91-93, 99
 - template 86-88
 - TTY 93-94, 99
 - VT100 94-95
- menu structure 49
- MenuMaker 25, 85, 86, 92, 319-325
- menus 57, 247-270
 - editing 49-54, 168-169
 - HTML document 90-91
 - scripts
 - see *menu scripts*
- message attachments 64, 67, 317
- message forum scanning 73, 74

- Message Forum 62-64, 170, 177-178, 317
 - InfoLink 196-199
 - newsgroups 221-225
 - moderating 141-142
- message import priority 202, 227-228
- message queue 165-166
- missing messages 228
- MODE32 22
- modem 20
 - cable 327
- moderating
 - file libraries 142-143
 - message forums 141-142
- Moderator Group field 59, 63
- moderators 40, 59, 63, 135, 140-141
 - access levels 141
 - groups 141
- Mosaic™ 236
- MOVIE 308
- movies 291, 308
- moving server components 53

N

- native application 26
- Net News Transfer Protocol
 - see NNTP
- Netscape™ 236
- Network button 61, 64, 196-199
- network connection types 191
- network events 199-201, 213-216, 225-227, 258
- network sites 186-190, 210-212, 217-219, 242, 267
 - editing 190-193
 - window 267
 - types 191
- networking 3, 17
- new users 123-124, 156-157
 - access level 119, 256
 - scripts 106-109, 111
 - survey 108-109
- NewScan 34, 74
- newsgroups 216-228
 - list 220
- NewUserSurvey script 108-109
- next repeat 282
- NNTP 216-228
 - event 225-227
 - High Message Number 199, 223-224
 - option 10
 - site 217-219
 - see also *message forum*
- NNTPFORUMS script 220
- NNTPSITE script 218-219
- Node Chat 69
- node status 46, 269

- nodes 34-37, 77, 250-252, 270
 - adding 35-37
 - timeouts 35
 - types of 35, 250
- Norton Disk Doctor™ 150
- Norton Speed Disk™ 151
- notice 77, 110-111
- NovaScript 83-111, 271-296
 - access levels 274-275
 - commands 286-293
 - conditionals 86-87, 97, 279-281
 - constants 275
 - dates and times 274-275
 - externals 285
 - functions 278, 284-285
 - loops 281-284
 - numbers 274-275
 - standard scripts 294-296
 - variables 276-277
 - see also *script*
- NovaServer application 27, 33
 - folder 27
 - installer 23-25
 - shutdown 34
 - startup 33
- NovaTerm 83-85, 290-291, 298, 319-325
 - menu script 89-90, 98
 - network nodes 34
- NovaTermLogon script 104
- NovaView 56, 84
- NS Externals folder 316
 - see also *externals*
- NS File Libraries folder 316
- NS Files folder 316
- NS Forums folder 317
- NS Install folder 27
- NS Installer icon 23-24
- NS Key 28-29, 315
- NS Logs folder 318
- NS Mail folder 318
- NS Network Mail folder 318
- NS Notifier 128
- NS Surveys folder 289, 318
- NS Votes folder 318
- NuBus expansion 21
- numbers in NovaScript 274-275

O

- ODBC 173
- ODBC Setup panel 257-258
- OL 306
- one-time bulletins 110-111
- Open Transport 22
- open text file 289
- open user file 289, 318
- operators 277-278
- optimizing 151
- optional features 9-11

Options 252-261
order of operations 277-278
outgoing messages 165-166

P

P 303
pagers 152
password 40, 41, 75, 127
pause for 286
phrase tags 304-305
PICT 319-320
picture previews 61
play movie 291
play sound 291
Playboy® 235
polls 65, 108-109, 318
pornography 139
post bulletins 64
Postmaster account 42
Power Macintosh 15
power failures 152
PowerPC 15, 26
PPP 18, 22, 207
PRE 304
pre-addressed mail 67
precedence 277-278
previews 61
print ANSI 96, 287
print file 105, 287
print paged text 105, 287
print RIP 292
privacy 137, 333
private board 116
private chat 69
Purge After field 63, 225
put user in group 134, 286

Q

QuickMail™ 9, 241-244
QuickTime 291, 308
quit events 149, 261
quitting NovaServer 34

R

RAID 16
RAM
 see memory
Read Level fields 62
Read Mail component 66
Read-Only checkbox 59
reading mail 66, 164
red 288-289
regional online service 8
releasing files 143
Remote Imaging Protocol
 see RIP
Remote Operations menu 78
remote maintenance 155-171

remote restarts 153
remote users 133, 159
remove user from group
 134, 286
repeat 281
Request Update button 193
request return 287
request URL 104, 232, 234, 284,
 291
request verification 287
resource sharing 173-174, 180-181
Resources file 316
Restart System on Crash
 checkbox 152
restricting web access 234-235
Retrospect™ 17, 149
Return 72
return 284, 292
RIGHT 306
RIP 91, 261, 292
 icons 92, 320, 323
 menu script 91-93, 99
RIP click 92-93, 292
RIP Files folder 317
RIPscrip panel 261
Root account 42
Run Script 71, 273
run script 104, 284, 292
running scripts 273-274

S

SAMP 304
SAM™ 150
schedules
 see events
screen blanker 22
screen name 127
scripts 101-102, 264, 272-273
 editing 101-102, 160, 272-273
 group maintenance 134
 Logon 105, 106
 menu 57, 85-99
 NovaTermLogon 104
 running 71, 273-274
SCSI JackHammer™ 16
searching documents 79-80
security 151
selecting subscriptions 75
Self-Maintaining checkbox 60
Send Bulletin 77
Send Doc Feedback 68
Send Document 68
Send Feedback 67
Send Mail 66
Send Update button 193
send output to 290
sending mail 66, 216
Serial nodes 35
serial port 20

- serial port 21
- Serial Switch control panel 21
- server components 57-81
 - Access Group 56
 - Access Level 56
 - adding 52-53, 168-169
 - deleting 53, 168-169
 - editing 53, 168-169
 - moving 53
 - settings window 52, 55-57
- server files 315-316
- server folders 316-318
- server log
 - see *logs*
- server maintenance 144-151
- server management 135-144
- Server Options window 252-261
- server security 151
- Server Status window 44-46, 268-269
- service files 85
- settings window 52, 55-57
- setup RIP menu 92, 292
- Share Site checkbox 193
- short circuits 205
- shutting down NovaServer 34
- SiliconExpress™ 16
- Simple Mail Transfer Protocol
 - see *SMTP*
- simultaneous users 34
- site
 - see *network site*
- size window 89, 290
- SLIP 18, 22, 207
- SMTP 10, 194-196
 - event 213-216
 - nodes 35, 209-210, 251
 - site 210-212
- SMTP Site field 213
- SND 308
- sounds 291, 308, 325
- spaces 236
- Speed Disk™ 151
- SQL server 257-258
- standard installation 24
- standard scripts 294-296
- starting NovaServer 33
- Startup Items folder 33
- status window 44-46, 268-269
- STRONG 305
- structure tags 303-304
- Subscribe 74
- subscription list 196-197
- subscription requests 197
- supervisor 186, 187-189
- surveys 65, 108-109, 318
- Sysadmin account 42
- Sysop account 38-40
 - access level 119, 257
 - chat 69, 249
- Sysop Available 249

- System 7 file sharing 241-242
- system operator
 - see *sysop*
- System Software 21

T

- T1 19, 207
- tags 298, 302-308
- tape
 - see *DAT*
- TCP/IP 10
 - nodes 35, 229-231
- telnet nodes 35, 229-231, 251
- telnet option 10
- telnet out 78, 231-232
- TEMPLATE 303
- Templates folder 317
- Terminal menu 248-249
- terminal
 - settings 75
 - window 104, 270
 - NovaScript 287-289
 - see also *ANSI, VT100, TTY*
- terrorism 139
- text editor 311-314
- theLINQ 9
- This is a missing message 228
- time limit 117
- timeout 35, 214
- times and dates 265-266, 274-275
- TITLE 302
- toggle word wrap 286
- Toolkit palette 51-52
- trademarks 138
- translation 102
- Tree 78
- TT 305
- TTY 128
- TTY menu script 93-94, 99
- typographic tags 305-306

U

- UL 306
- Uniform Resource Locators
 - see *URLs*
- uninterruptible power supply 152
- Upload Level fields 59
- upload file 289
- upload log 60
- uploading 58-61, 67, 167
- uploading 333-334
- UPS 152
- URL Control List 234-235
- URLs 6-7, 75-77, 90-91, 177-178, 232-234, 273, 291, 300, 300-301, 307
- usage log
 - see *logs*

Usenet 216-228
user accounts
 see *accounts*
user agreement 106-108, 140,
 329-336
user interaction 286-287
user list 68, 77
 see also *accounts*

V

validating accounts 123-124,
 156-157
VAR 305
variables 276-277
verifying accounts
 see *validating accounts*
Virex™ 150
virtual server 5, 173-181, 257-258,
 259
viruses 143, 150
Vote 65, 318
VT100 84, 128
 menu script 94-95
 window in NovaTerm 104

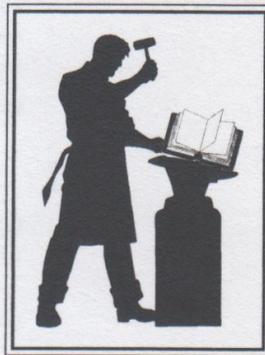
W

WAIS 79, 237-239
warranty statement 335
Web
 see *World Wide Web*
Welcome.html file 103
Welcoming callers 103-106
white 289
Wide Area Information Server
 see *WAIS*
Windows menu 268-270
WindowScript 84
World Wide Web 72, 75-77
 access level 116, 129, 234-235
 browsing 10, 232-234
 cache 319
 publishing 10, 236-237
Write Level fields 63
write 290
WWW
 see *World Wide Web*

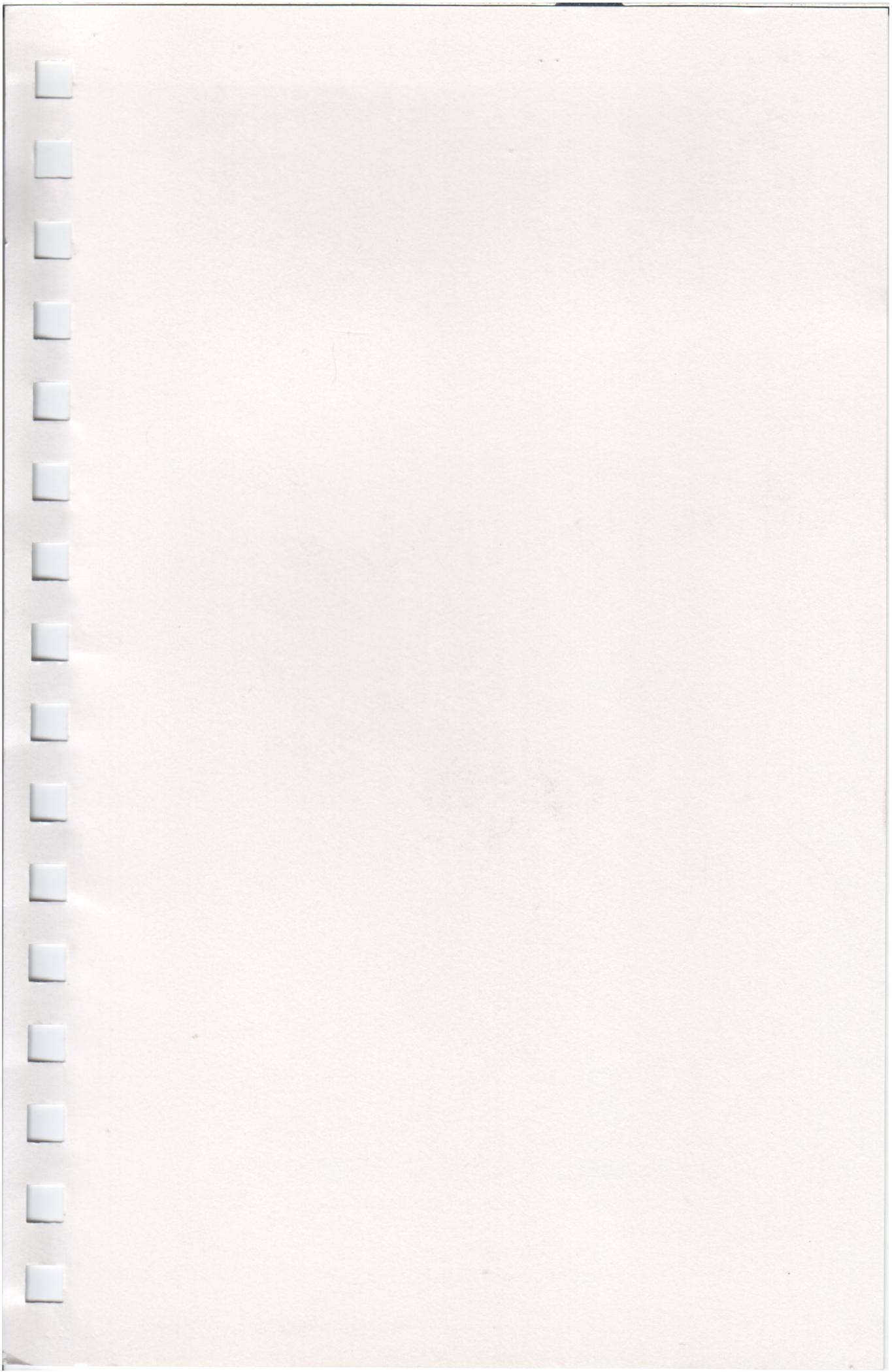
X-Y-Z

yellow 289

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