

Administrator Guide

for version 1.1.1

Guide Edition 1.1g
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Thank you for choosing ClickMail!

ClickMail Central Directory is the perfect complement to AppleShare IP mail services or any other POP or IMAP mail server. ClickMail provides the missing link: a master address book of your users' email addresses.

Your users on Macintosh, Windows, or Unix (and optionally the public), can look up email or postal addresses, phone and fax numbers, any kind of information you want to keep about people, devices, and services. Thanks to the Internet standard LDAP protocol, users can find addresses from ClickMail right from their email programs. LDAP-aware clients include Netscape Communicator, Outlook Express, Eudora Pro, Mulberry, QuickMail Pro, Sherlock 2, and Mac OS 9's Network Browser.

ClickMail comes in two versions: Basic, with up to 100 entries; and XL, with unlimited entries and remote web administration.

ClickMail may be evaluated for 30 days from installation. After the evaluation period, you may purchase ClickMail or export your data and delete the software.

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Contents

How ClickMail works	5
System requirements	6
Getting started	7
Installing ClickMail	7
Files installed in the ClickMail folder	7
Other ClickMail files	8
Test drive ClickMail	9
Opening the example directory	9
Looking at the entries	10
Looking up with a client program	11
Setting up a directory	16
Your data	16
Making a new directory	16
Special entries	19
Importing entries	20
Typing new entries into ClickMail	22
Working with entries	24
Browsing entries	24
Finding entries	24
Editing an entry	25
Adding an entry	26
Deleting an entry	26
Distinguished name in the entry window	27
Understanding ClickMail and directories	28
Launching ClickMail	28
Mirroring AppleShare	28
What is an entry?	30
Distinguished Names—the unique identifiers for entries	30
Basic email lookup directory	32
Tree directory	33
Formal X.500-style directory	34
Other kinds of entries	35
User strategy: an example	35
LDAP Write	36
Client programs	37
Generic directions	37
Eudora Pro 4	37
Mulberry	39
Netscape Communicator 4.5	41
Outlook Express	43
QuickMail Pro	46
Sherlock 2 and Network Browser	48
Export/Import	49
Tab-delimited format	49

Contents

LDIF	50
vCard	50
Import/Data Utility	50
Importing with Drag-and-drop or AppleScript	52
Modifying your directory data offline	53
Permissions and security	56
Database permissions	56
Attribute permissions	56
Attributes window	57
Permissions window	57
Remote Web Administration	61
Installing Web Administration	61
Personal Web Sharing and permissions	62
Using Web Administration	65
Edit Mode	69
Find Mode	71
Browse Mode	73
Permissions	74
Customization	76
Reference	77
Menus	77
Windows	80
Troubleshooting	88
Error messages in client programs	88
Other problems in client programs	89
Error messages in ClickMail	91
Web Administration error messages	92
Other Web Administration problems	92
Other issues	93
Links and thanks	95
Web sites	95
Colophon	95
Acknowledgments!	96
Glossary	97

How ClickMail works

The basic purpose of ClickMail Central Directory is to provide a master address book that a group of people can use to look up email addresses. When a user wants to send someone email, he/she opens an email program, types in part of a name, and clicks Find. The email program asks ClickMail for the email addresses of everyone who's name contains "Fred" (what the user typed). ClickMail sends back a list of people who match, including name, email, and possibly other attributes such as phone, pager, address, etc. The user selects a name and clicks a button to create an addressed message. If you don't want to access a server every time you need an email address, the email program stores captured addresses in a local address book.



ClickMail is compatible with many email programs because it uses an Internet protocol, LDAP (Lightweight Directory Access Protocol). It works with LDAP v2 clients and LDAP v3 clients (not all features of v3 are implemented).

Per LDAP, ClickMail keeps a **directory** containing **entries** for the people listed. Each entry contains **attributes** that describe the person, such as common name, email address, telephone, etc. LDAP clients can search using one or more attributes ("Give me all Joneses in the Cleveland office that have fax numbers"). Or they can just download all the entries into their local address books (depending on permissions and maximums set by the administrator).

System requirements

System requirements

- **Power Macintosh** with System 7.5.3 or later, Open Transport 1.1.2 or later. Free RAM needed: Virtual Memory on: 3.5–5MB; VM off: 6–7.5MB. Disk space: 3MB + 4K per entry.
- *If integrating with AppleShare:* AppleShare IP 5.0 or later and the AppleShare IP Registry API extension (a shared library found on your AppleShare IP install CD-ROM).
- The extension “OpenTptInternetLib” must be present in the Extensions folder. For Systems 7.5–7.6.1, AppleScriptLib, InterfaceLib, MathLib, and ObjectSupportLib must also be present. These are all part of your normal Mac OS. If one is missing, an alert is displayed when ClickMail is opened.
- TCP/IP (Open Transport) must be properly configured.
- ClickMail is designed to be accessed by LDAP-aware clients (on Mac, Windows, and Unix) such as Netscape Communicator, Eudora Pro 4*, Mulberry, QuickMail Pro, Outlook Express, Sherlock 2 (with plug-in), and Mac OS 9 Network Browser.

*For proper operation, use Eudora Pro 4.01 or later (http://eudora.qualcomm.com/pro_email/updaters.html)

Getting started

Installing ClickMail

1. Double-click the ClickMail Installer program on your hard disk or floppy disk. Read the Read Me message (displayed by the installer) for late-breaking news.
2. Whether you are installing for the first time or upgrading, Easy Install will do the right thing. If you wish, select any folder or disk to contain the ClickMail folder. Click the Install button, and respond to any onscreen messages. When it's finished, quit the installer.
3. If integrating with AppleShare, copy the library file "AppleShare IP Registry API" from your AppleShare IP CD-ROM to the Extensions folder.
 - There is no need to restart the Macintosh.
4. If this is a purchased copy (rather than evaluation), open ClickMail from the Finder and choose Serial Number... from the Edit menu. Enter your serial number and click OK. If you do not enter a serial number, ClickMail runs for 30 days as an evaluation.

Files installed in the ClickMail folder

ClickMail C.D.



The application program that does all the work.

Import/Data Utility.fm3



This FileMaker 3 document may be used to prepare data for importing into ClickMail. It can also be handy for offline manipulation of data from your running ClickMail directory. See Export/Import for more information.

Getting started

Example directory datafile, Example directory datafile keys



These two files are an example directory for you to try. Do not store your real data here—create your own datafile.

ClickMail C.D. Admin Guide.pdf



The online version of this guide. It is enhanced with bookmarks, clickable contents and index, hyperlinks, and an Acrobat Search catalog for fast searching.

ClickMail 1.x Read Me, Software License Agreement, Order Form, and Import File Example (AppleScript)

The usual suspects. Read “ClickMail 1.x Read Me” for additional information that may not be in this guide.

Other ClickMail files

ClickMail LDAP Preferences

This file, located in the Preferences folder, is created by ClickMail when it is launched. Here it remembers which datafile to open, and other settings.



A ClickMail directory is stored in a matching pair of files. You name the first file, ClickMail gives the second file the same name plus “keys.” We refer to this pair as a “datafile.” Be sure to keep these files paired—for example, don’t restore one from a backup without the other. You may create as many datafiles as you wish, but only one is open/in use at a time.

- A datafile should not be copied or backed up while it is open (ClickMail is using it). This is because a copy of a file in an open state cannot be reopened later. To copy the datafile, make a backup with ClickMail’s Backup command (File menu), then copy the two backup files.

Configure Directory Server

Stand-alone server
 ?

AppleShare Users & Groups mirror
 OCS Server

AppleShare Server

Administrator Name:

Password:

Email Domain:

Last, First Last First

Administrator's Email:

Max entries to return: Leave blank

Max seconds per search: for no limits.

Datafile

Geo : ...Testing :LDAP test dbs :Example database

Configure directory server window.

Test drive ClickMail

Let's take it for a spin. This will help you get familiar with how it works before setting up your own directory.

Opening the example directory

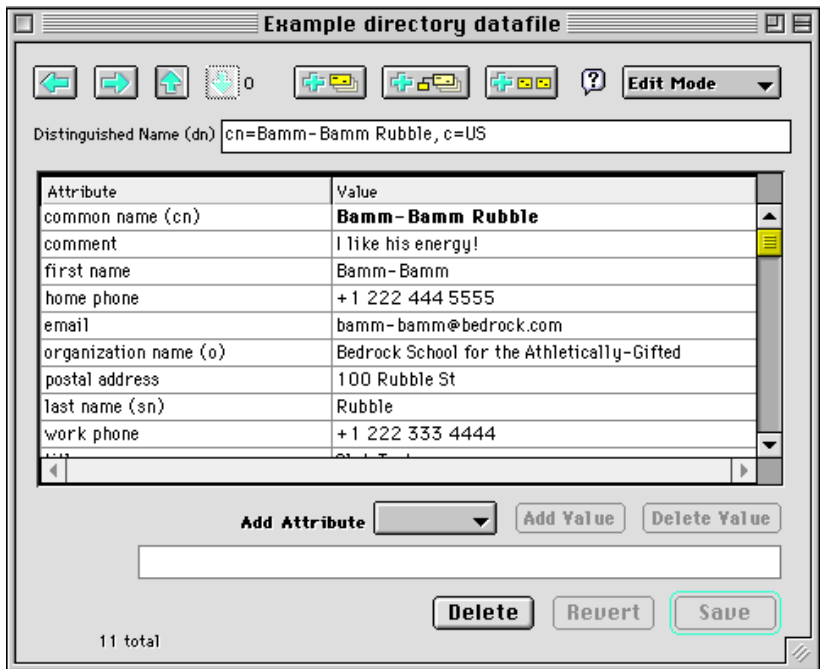
1. Double-click the ClickMail C.D. application. The Configure Directory Server window appears. (If it doesn't appear, from the File menu choose Configure....)
2. For this tryout, the "Stand-alone server" radio button should be selected.
3. In the Datafile box, click the Open... button. Open the file "Example directory datafile" in the ClickMail folder.

Getting started

3. Enter your email address in “Administrator’s Email.” The software may use this later to notify you in certain cases.
4. Click OK. ClickMail opens the example datafile (as noted in the ClickMail Log window). It’s ready to look up email addresses!

Looking at the entries

1. From the Database menu, choose Entries.... In the Entry window, you may add, delete, and edit entries (records) in the directory.
2. Look over the first entry. In the scroll list, there is a column of attribute names and a column of values of those attributes. Browse through some entries by clicking the right or left arrow buttons.



Entry window.

Each data field, or **attribute**, has an **attribute name** and one or more values. ClickMail always presents attribute names in plain English, rather than the sometimes obscure LDAP terms. For example, the LDAP attribute “sn” is called “last name (sn)” in ClickMail. The actual LDAP term is used when communicating with LDAP clients, and also in distinguished names.

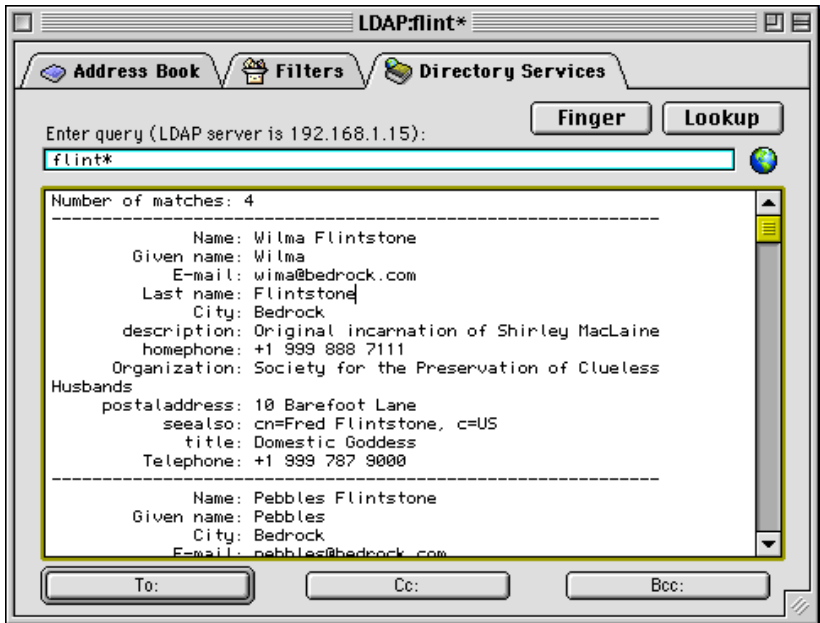
- Each entry has a unique name, called the **distinguished name** (shown at the top of the window). This name distinguishes one entry from another—it’s the label for the whole entry. The **common name** (cn) attribute is often used for the first part of the distinguished name. The last part of the distinguished name is the naming context. It’s usually the country you are in (in this case “c=US”).
3. In an entry, click the email address. It appears in the edit box below the list. Make a change to the address, press tab or return, then click Save. You’ve now edited an entry.
 4. When you’re done, close the Entry window.

Looking up with a client program

The goal here is to look up addresses from an email client, so let’s do that. You will need an LDAP-aware client program such as Netscape Communicator, Outlook, Eudora Pro 4, Mulberry, or QuickMail Pro. If you’d like to try Sherlock 2 or Network Browser with ClickMail, see our web site. Always run the client on a different machine than ClickMail. The client must have TCP/IP properly configured.

You need to know the IP address or host name (if any) for the Mac running ClickMail. Usually you can find this in the TCP/IP control panel. Next, open your client and follow our directions for Eudora, Netscape, or Outlook in this chapter. For more information about a client, or for Mulberry or QuickMail Pro, see the Client Programs chapter.

Getting started



Eudora Pro Directory Services window.

Eudora Pro 4

1. From the Special Menu, choose Settings.
2. Click the Hosts icon.
3. In the Directory Services field, enter a URL for the Mac running ClickMail, starting with "ldap://".

Examples:

ldap://ldap.mydomain.com/

ldap://123.45.67.89/

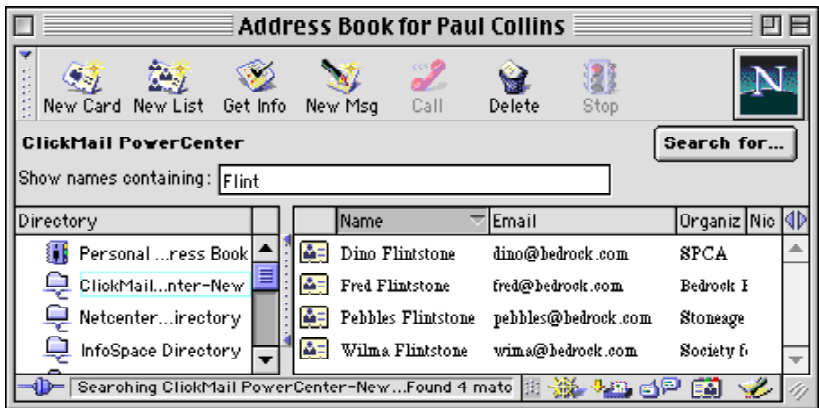
Click OK to save the settings.

4. From the Window menu, choose Directory Services.
5. In the Entry query field, type "Flint*" and press return. Several entries are listed in the large field.

6. Click in any entry, then click the To button. A message window opens, pre-addressed to the person you selected. Discard the message when you're done.

Netscape Communicator 4.5

1. From the Communicator menu, choose Address Book.
2. From the File menu, choose New Directory. This opens the LDAP Server Properties window.
 - Older versions of Communicator do not have a New Directory command in the File menu. Add new directories under Edit->Preferences->Mail & Newsgroups->Directory, New (button).
3. In Description, enter "ClickMail Directory" (or whatever name suits you).
4. In LDAP Server, enter the host name or IP address of the Mac running ClickMail.
Examples: ldap.mydomain.com 123.45.67.89
5. You can leave the other fields as they are (Search Root blank, Port Number 389, etc.). Click OK. The Directory is added to the left pane of your Address Book. Select it.



Netscape Communicator Address Book window.

prevent it from working correctly. Leave Internet Config alone for now.

6. On the left side of the Outlook Express window, choose ClickMail Directory. Under our name in nice large lettering, enter “Fred” in the Search for Name field. Click the Find button.
7. Select a name in the list that appears, then click the Mail to: button. This opens a message to that person. Discard the message when you’re done.

Next, get real!

This concludes the test drive. The next section, **Setting up a directory**, guides you through the task of setting up your own data for access by your users.

Setting up a directory

Your data

Decide what attributes you want to store (email address, phone, etc.). The simplest option is to use our default “emailPerson,” which covers the attributes shown by most clients in their list views. You may add other attributes to your entries. Or, use a standard schema (inetOrgPerson, LIPS, etc.). For a detailed discussion, see the **Kinds of Directories** and **Client Programs** sections.

- For a handy list of standard attributes (in addition those in our simplified emailPerson), open the Attributes Reference window (File menu).

Input: Entries may be imported in any of three formats (LDIF, tab-delimited, or vCard) or entered directly in ClickMail. Changes to entries may only be made directly in ClickMail (or via Web in ClickMail XL)—changes via LDAP are not yet supported. However, all entries may be exported for offline maintenance, then reimported.

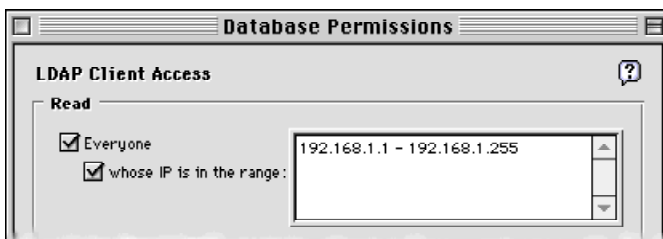
ClickMail may be run as a “mirror” to your AppleShare IP Users & Groups Registry. When you open the directory with this setting, all AppleShare users appear in ClickMail’s directory. Also, entries entered or imported into ClickMail can be placed into Users & Groups automatically.

Making a new directory

1. Launch ClickMail and immediately hold down the shift key. The Configure Directory Server window appears.
 - If ClickMail is already running, from the File menu choose Configure....
2. Choose the type of database, stand-alone or AppleShare mirror. Enter the administrator’s email address.

Setting up a directory

- *AppleShare mirror only:* fill in administrator's name, password, and email domain. If user names in AppleShare's Users & Groups are surname-before-given name, check one or both of the "Last, First" and "Last First" boxes. If a comma is included in some or all AppleShare entries, check "Last, First." If the surname appears first without a comma, check "Last First."
3. Click New, name your datafile (use a name no longer than 18 characters), and click Save. Click OK in the Configure window.
 4. In the "Naming Context" window, enter "c=US" (or c= your own country's code). Your new directory is now created.
 - *AppleShare mirror only:* You are prompted to choose an AppleShare Server from those available on the network. Next, the AppleShare users are copied into the directory and indexed. This may take a while. When it's done, the splash screen goes by and the log shows "IP LDAP Daemon LDAP Daemon Opened."
 5. From the File menu, choose Logging... Choose the desired type and level of logging.
 - Suggestion: Set window and file logging, "Important" level ("All" gives a very large amount of detail and greatly slows down the server). The log file is a plain text file found in the same folder as ClickMail.
 6. From the Database menu, choose Permissions.... Check the Everyone box so that users can access the directory. To



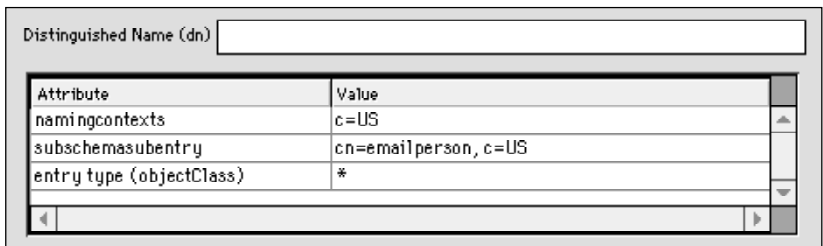
Setting directory access for a range of IP addresses.

Setting up a directory

limit access to only your group or company, check the “whose IP is in the range” box and enter the range of IP addresses of your users’ computers in the text field. (Example: 123.45.67.1 - 123.45.67.255). Write permissions should be left off (unchecked) in most cases.

7. From the Edit menu, choose Preferences.... We recommend you check the “Backup daily?” and “Compact Daily?” boxes and set appropriate times. The Backup setting creates a closed backup copy of the current datafile automatically each day. The Compact setting ensures that unused space in the datafile is removed more frequently. If Compact is unchecked, the datafile is still compacted when necessary.
 - *AppleShare mirror only:* If you want newly created or imported entries to be added to ASIP Users & Groups by default, check “Add new entries to ASIP Users & Groups.” If you want passwords from AppleShare copied into all ClickMail mirror entries, check “Copy passwords from ASIP Users & Groups.” Passwords are hidden from LDAP clients by default (see Permissions and Security). To cause ClickMail to resynchronize its entries with AppleShare Users & Groups daily, check “Sync to AppleShare daily” and enter a time of day.

IMPORTANT: Only a backup or closed version of the datafile can be restored for later use. Make a backup copy of your directory at this time by choosing Backup from the File menu. Then move the files “copy of <your datafile name>” and “copy of <your datafile name> keys” (created by the Backup command) to a backup storage device. Move or



The screenshot shows a window titled "Distinguished Name (dn)" with a text input field. Below it is a table with two columns: "Attribute" and "Value".

Attribute	Value
namingcontexts	c=US
subschemasubentry	cn=emailperson, c=US
entry type (objectClass)	*

Domain Specific Entry (DSE) as seen in entry window.

copy these files for backup, not the open datafile. **We recommend that you back up the two files daily (using the preference setting) or whenever you make a change to the data.**

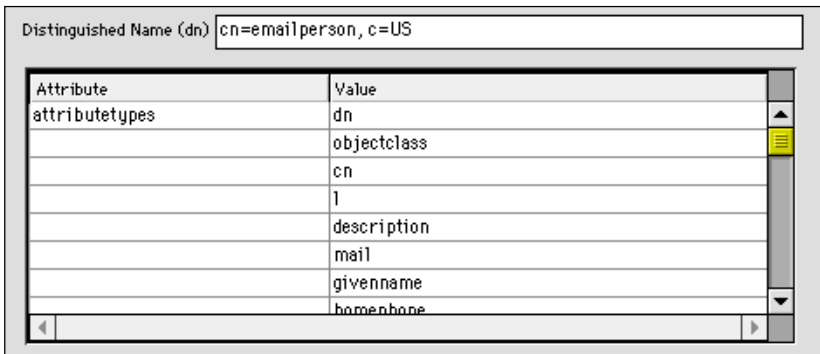
Special entries

In each new directory, ClickMail creates two entries required by LDAP. They are mentioned here because you will see them in the Entry window. These rarely need to be changed.

If you wish, skip to Importing Entries on the next page and read this part later.

Domain Specific Entry (DSE): This is the “top” entry. Its distinguished name is “” (an empty string). Its three required attributes are **namingsContexts** (usually one, which you just entered), **subschemaSubentry** (a list of distinguished names of subschema entries), and **entry type (objectClass)** (always “*”). The DSE cannot be deleted.

Subschema Entry: This describes an entry type (objectClass) used in your directory to describe a schema. Its common name is the name of the entry type (our default: emailPerson). attributeTypes lists the attributes that may appear in each entry. objectClasses lists the objectClass and its parents (don’t confuse this with the entry type attribute, whose LDAP name is objectClass, singular). To be LDAPv3



Attribute	Value
attributetypes	dn
	objectclass
	cn
	1
	description
	mail
	givenname
	homenphone

Subschema Entry as seen in entry window.

Setting up a directory

compliant, the directory must contain at least one subschema entry. ClickMail automatically creates an entry called “emailPerson.” It is designed to cover the attributes expected by the major email clients. You may edit or replace this entry to support different LDAP schemas.

Importing entries

If you have a list of user names and addresses in tab-delimited format, you can probably import them directly into ClickMail. Among your tab-delimited fields (columns), you must have either a full name field or separate first name and last name fields. And, you should know the order of the fields in your tab-delimited file. ClickMail can also import LDIF text files. For a more detailed look at importing, see the **Export/Import** section later in this guide.

- If you are running ClickMail as an AppleShare mirror, users in AppleShare’s Users & Groups are automatically imported by ClickMail. You do not need to use the Import command. See **Your Data**, above.
 - If you want to type your entries directly into ClickMail, see **Typing new entries into ClickMail**.
1. To import entries, from the File menu, choose Import—Tab-delimited. This brings up the Import Tab-delimited window, containing a list of attribute names.
 2. A newly-installed ClickMail shows a list of standard fields, those commonly used in directories. If no fields are listed, from the Lists menu, choose Standard Fields. Edit the list so that it matches the order of fields in your tab-delimited file. In the list, line 1=field 1, line 2=field 2, etc.

The name game

If you are importing using full names, list the common name (cn) in the position where the full names are in your file. If you are importing separate first and last names, use the first name and last name (sn) items. Use copy and paste to line up

Setting up a directory

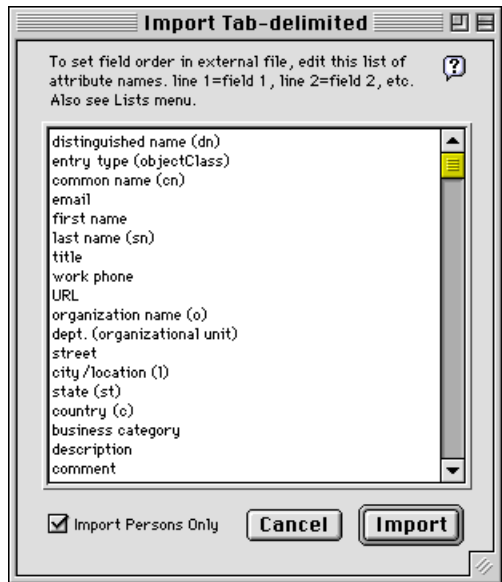
the field names in the same order as they appear in your file. Leave a blank line to skip over any unused fields in your file. Delete all names that you are not importing.

- Don't use distinguished name (dn) unless you are actually importing formatted distinguished names.
 - Imported entries are given the type "emailPerson" unless you import an **entry type (objectClass)** field. If you do import this field, the Email Persons Only checkbox prevents non-person entries (such as schema entries) from being imported.
3. Before you import, you may save the list itself as a file. From the Lists menu, choose Save Field List...
 4. Click Import. Choose your tab-delimited file from the Open File dialog. The entries in the file are then imported and indexed. This may take a while, depending on the size of your data. The log file reports any rejected records.

Once your entries are imported, make sure they are valid by viewing them in the Entry window.

Importing vCards

If you have vCard files (file extension .vcf) you wish to import, simply select them all in the Finder and drag and drop them on the ClickMail application icon. Or, import each file using ClickMail's Import vCard command under the File menu. Additional




Import Tab-Delimited window with standard field list.

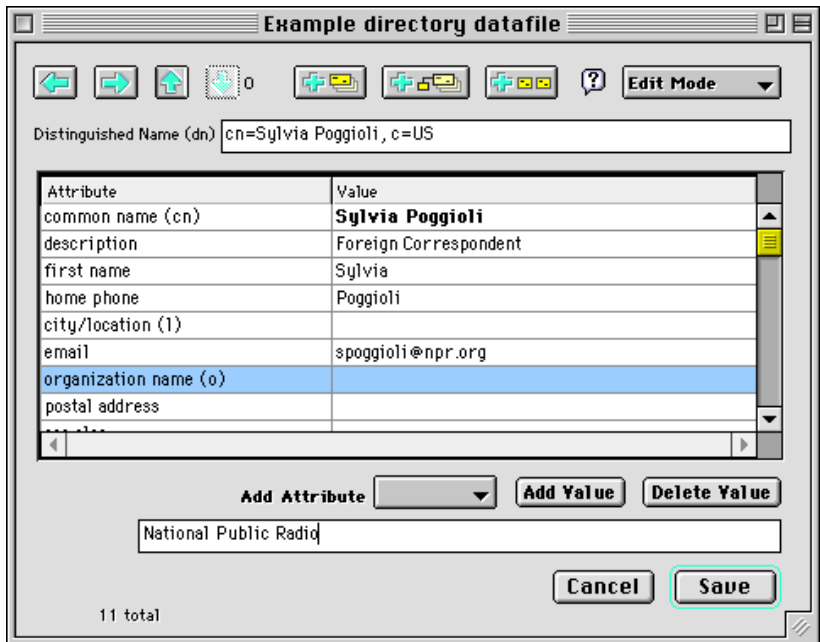
Setting up a directory

vCards may be dropped on the ClickMail application icon at any time.

Typing new entries into ClickMail

Instead of importing, you may create entries directly in ClickMail. You should already have completed **Making a new directory**, above.

1. To open the Entry window, from the Database menu, choose Entries....
2. Click the Add Entry button: . An unnamed user entry appears.
3. Tab to enter the first attribute, which is common name. Type in the full name of a person (“John Smith”). Typing is done in the edit field near the bottom of the window. Tab to the next field.



The screenshot shows a window titled "Example directory datafile" with a toolbar at the top containing navigation and action icons. Below the toolbar, the "Distinguished Name (dn)" field contains "cn=Sylvia Poggioli, c=US". A table lists attributes and their values:

Attribute	Value
common name (cn)	Sylvia Poggioli
description	Foreign Correspondent
first name	Sylvia
home phone	Poggioli
city/location (l)	
email	spoggioli@npr.org
organization name (o)	
postal address	
telephone	

Below the table, there are buttons for "Add Attribute", "Add Value", and "Delete Value". The "Add Attribute" dropdown menu is open, showing "National Public Radio" selected. At the bottom right, there are "Cancel" and "Save" buttons. The text "11 total" is visible in the bottom left corner.

Typing a new entry into the entry window.

Setting up a directory

4. Enter values for the attributes, skipping those you are not interested in. At a minimum, enter common name, first and last names, and email address. Entry type is filled in for you.
5. Check your work, then click Save. Any unused attributes are removed from the entry.
6. Repeat steps 2 through 5 for each person.
7. When you are finished, from the File menu, choose Backup. This creates a backup copy of the two files that make up the directory database (a database file and a “keys” file). For the backup function to succeed, your database filename must be 18 or fewer characters. (To rename, quit ClickMail, rename both files in the Finder, then restart ClickMail and open with the new name.)
8. Your directory is ready for use!

Working with entries

Browsing entries

To open the Entry window, from the Database menu, choose Entries.... The window title is the name of your datafile. To browse among entries use the left and right arrow buttons at top left.

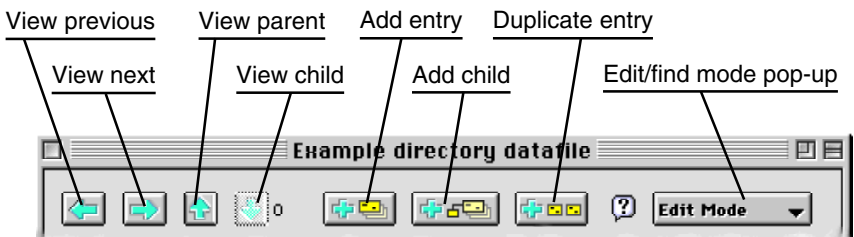
The up and down arrows are for tree-style (parent-child) browsing. *You can ignore these for most basic directories.* To see the parent of an entry, click the up arrow. To browse among the children of an entry, click the down arrow.

- *Tree-style directories:* The number of children of the current entry is displayed next to the down arrow.

Finding entries

To find one or more specific entries, choose Find Mode from the pop-up menu at upper right. In Find Mode, all the attributes used in any directory entry are listed. Enter all or part of the text of one or more attribute values, then click Find. The values are treated as substrings. If you want an exact value, type an equal sign in front of the value (“=Smith”). You can specify all values greater than or equal to (or less than or equal to) the entered value (this compares alphabetically, not numerically). Examples: “>=Jones” or “<=Smith”.

If you enter values in several attributes, only entries that contain all the values are returned (this is a boolean AND of



the values). Searches are not case sensitive. Accented letters in entries are a match for their plain text equivalents you enter in find mode (“e” finds “é,” “ê,” etc.).

After a Find, you may browse and edit the found set of entries. The number of entries found is displayed at the bottom. Clicking the left and right arrows browses only the found set. To go back to browsing all entries, choose Find all from the pop-up menu.

To find group entries, subschemas, or the DSE, use the shortcut commands in the Entries menu, which is active when the Entries window is open.

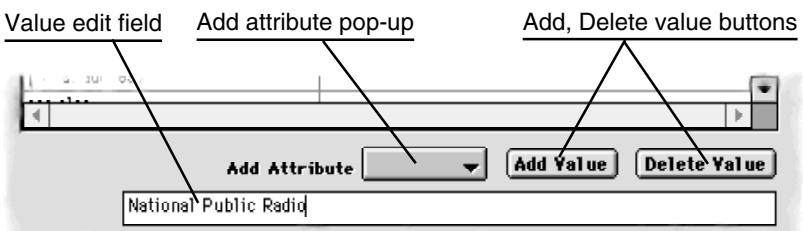
Editing an entry

You may edit the entry being viewed. Any changes to the entry are saved to disk when you click Save or move to a different entry (similar to the behavior of FileMaker). Turn on balloon help for button explanations.

To add an attribute to the current entry, choose it by name from the Add Attribute pop-up menu (choose Other... if you don't see the one you want).

To add additional values to an attribute (such as multiple common names), select the attribute in the scrolling list and click the Add Value button.

When you add a new attribute (or value), type the value into the edit field near the bottom of the window. To “enter” the



Edit controls in the Entry window





Working with entries

value, click any button or pop-up, press the tab or return key, or click in the window's margins.

To delete an attribute value, select it in the scrolling list and click Delete Value.

To edit an attribute value, click it in the scrolling list. The value appears in the edit field. Edit the value in that field. To “enter” the change, click any button or pop-up, press the tab or return key, or click in the window's margins.

Adding an entry

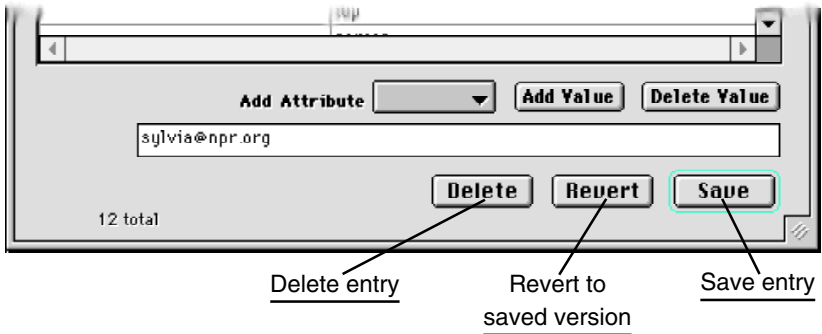
To add a new entry, click an Add entry button (one of the three “” buttons at the top of the entry window). The first button  adds a blank entry. The second button  adds a blank entry as a child of the current entry (don't use this unless you are organizing your entries in a tree structure). The third button  adds a duplicate entry, just like the current entry, except with a common name of “unnamed.”

The “blank entry” is actually an entry with all the emailPerson attributes in place. Tab into the first attribute (common name), and replace “unnamed” with the full name of this person. Tab to the next field and continuing entering data. Skip over the attributes you don't want. To add any attributes that are not listed, use the Add Attribute pop-up menu. When you are finished, click Save. Any attributes that you left blank are removed when you first save the entry.

Deleting an entry

To delete an entry, view it in the entry window and click the Delete button. If you organize your entries in a parent-child tree, the Delete button is disabled if the entry has any child entries. In that case, you must delete the child entries first.

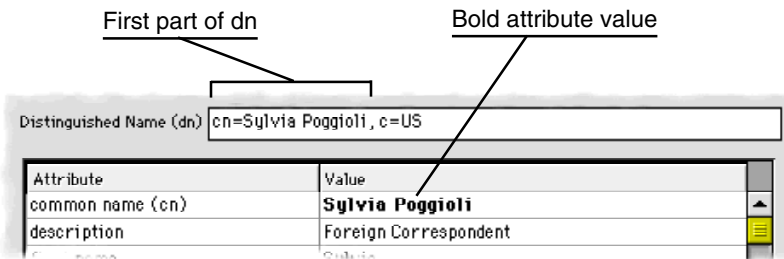
Working with entries



Distinguished name in the entry window

The distinguished name (dn) for the entry appears in a separate field at the top of the entry window. This may not be edited directly, but you can change its value.

The first part of a dn always appears as an entry attribute value, shown in bold. (This part is sometimes called the relative distinguished name or rdn). If you edit the bold attribute value, the dn is also changed. To use a different attribute value, double-click the other value in the attribute list. The new value becomes bold and becomes the new first part of the dn.



Value in bold is used as first part of distinguished name.

Understanding ClickMail and directories

Launching ClickMail

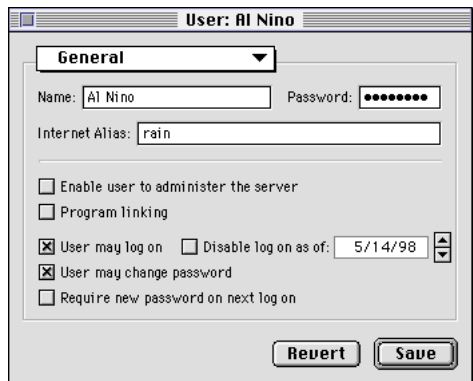
When ClickMail is launched (opened), it opens the last datafile used (as stored in its preferences). If there is an error opening the file (for example, it has been renamed or moved), the Configure window is opened and the error is shown, so that you can choose or create a new file.

If a datafile is double-clicked in the Finder, that datafile is opened in ClickMail (whether or not ClickMail was already running). Using the open command in AppleScript on a datafile has the same effect.

Mirroring AppleShare

When “AppleShare Mirror” is selected in ClickMail’s Configure window, the database downloads all users from an AppleShare Users & Groups Registry, and maintains “mirror” entries in the ClickMail datafile.

Any changes made in ClickMail to AppleShare users are automatically made to their Users & Groups entry as well, for certain attributes that appear in AppleShare. AppleShare changes supported by ClickMail include add user, delete user, set Alias (the username part of the email address), and set password. The changes are reflected in AppleShare as soon as the ClickMail entry is saved.



AppleShare user as seen in AppleShare Admin’s Users & Groups display.

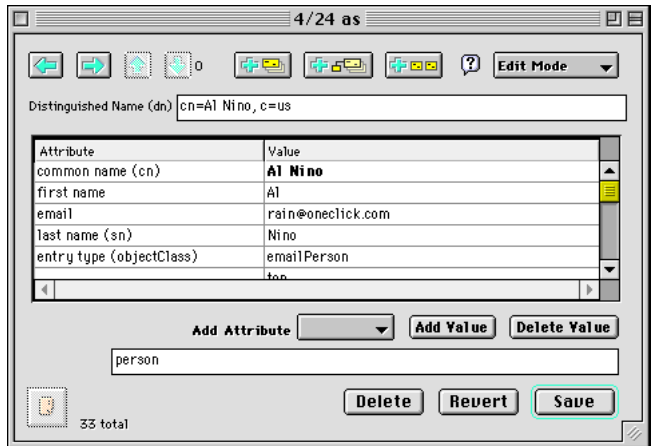
Understanding ClickMail and directories

ClickMail attributes that are kept in sync with AppleShare are common name (cn), email (before the “@”, as AppleShare User Alias), user access flags, and password (if present in the ClickMail entry or enabled for all entries under ClickMail Preferences.)

Newly added AppleShare users have two settings enabled: “User may log on” and “User may change password.”

- In the current version of ClickMail, a new user’s default AppleShare mail setting is “No Mail.” To enable an AppleShare mail account, you must use the AppleShare IP Web & File Admin or AppleShare IP Mail Admin program.

Changes made in AppleShare are detected in ClickMail only when ClickMail performs a synchronize function. This occurs whenever ClickMail is started, when “Resync from AppleShare” is chosen from the File menu, and when scheduled under ClickMail Preferences. To bring ClickMail up to date after making AppleShare changes, choose the “Resync from AppleShare” command. When practical, make AppleShare user changes in ClickMail to avoid the need to resynchronize.



The same user mirrored in ClickMail. User icon at lower left indicates this is a mirrored AppleShare user.

Understanding ClickMail and directories

AppleShare IP groups are mirrored as separate entries of type “asipgroup” (an LDAP objectClass). This allows listing group email addresses that can be found by LDAP client searches. These entries are not regular LDAP “groupOfPersons” groups. Group membership must be assigned in AppleShare IP Web & File Admin.

AppleShare IP user access flags are included in mirror entries in the “asipflags” attribute. The flags are displayed in hexadecimal (preceded by “16#”) and may be edited. Editing is only recommended if you are familiar with the flags and their effects in AppleShare IP.

What is an entry?

The directory contains entries. Entries may represent persons, roles, machines, programs, server volumes, web sites, or anything else you may want to look up. The most common use for an LDAP server such as ClickMail is for looking up people’s email addresses.

Each entry contains attributes, such as common name, email address, phone number, etc. Decide what information you want to store about each person. One criteria may be what types of data are supported/displayed by the LDAP client programs you intend to use. To make this easy, ClickMail’s default entry type, “emailPerson,” includes the primary fields for the programs listed in our Clients section below.

Distinguished Names—the unique identifiers for entries

Each entry has a unique name, called the distinguished name (or dn), a label which is used to find and identify that entry. It consists of a list of data values, ordered from small (such as common name) to large (such as country). Some examples:

cn=Janet Smith, c=US

cn=“James Smith, Jr.”, o=Some Company, c=US

o=“Acme, Inc.”, c=US

Understanding ClickMail and directories

ou=Creative Dept., o="Acme, Inc.", c=US

cn=Andy Jones, ou=Creative Dept., o="Acme, Inc.", c=US

Notice that the last three examples build on each other from right to left. Any entry can be a parent of other entries, if the child entries' dn's are built from the parent's dn by adding a new name on the left. This could be used by a company to list departments ("ou" means organizational unit), which contain people. Although ClickMail supports this kind of parent-child structure, it is not needed for basic email lookups. All you need is an identifier (cn=Janet Smith) followed by your naming context (c=US).

Attribute	Description	Example
distinguished name (dn)	uniquely identifies each entry	cn=John Smith, c=US
entry type (objectClass)	what this entry represents	emailPerson person top
common name (cn)	one or more full names for this entry	John Smith Janet R. Smith
first name		John
last name (sn)	surname	Smith
organization name (o)	company or organization name	My Company, Inc.
email	(LDAP name: "mail")	john@mycomp.com
title		President
work phone		+1 650 555 1000
home phone		+1 650 555 1212
postal address	lines delimited by dollar signs	1234 Main St.\$Anytown, CA 12345\$USA
description		Main contact
see also	person's web page	http://mypage.com/

Attributes in the emailPerson entry type.

Understanding ClickMail and directories

You can choose what attribute you use for first part of the dn. It's traditional to use the common name, but for large groups where two people may have the same full name, a username (from the email address) or ID number could be used.

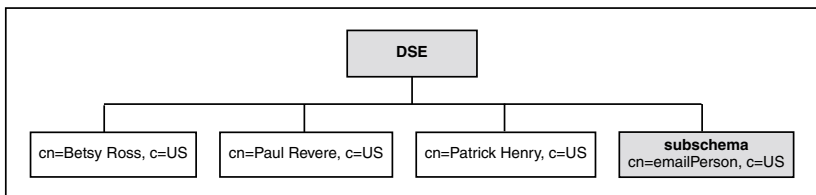
You must choose a naming context for the entire directory, typically the country your organization is in ("c=US"). You could also include the organization name ("o=Acme Manufacturing, c=US"), but making it an attribute in individual entries is more flexible.

Basic email lookup directory

The simplest application of LDAP is for email-address lookups within a group or company. All you need is an entry for each local user, with at least a name and email address. Depending on the client programs being used, various other attributes (phone, department, etc.) may optionally be used and viewed.

A *flat* directory structure is simplest and often works great. Each entry's distinguished name consists of two parts: the user's identifier (usually common name), and naming context (usually your country).

- Examples of distinguished names from three different flat directories:
cn=Betsy Ross, c=US
cn=William Shakespere, c=UK
uid=12345, c=US



Outline of a flat directory. The naming context is "c=US." The two shaded entries are required and automatically created in each new datafile (see Special Entries).

Understanding ClickMail and directories

You can put all your entries at the “top” level of the directory simply by avoiding the “New Child” command.

- The directions in **Setting Up A Directory** result in a flat directory.

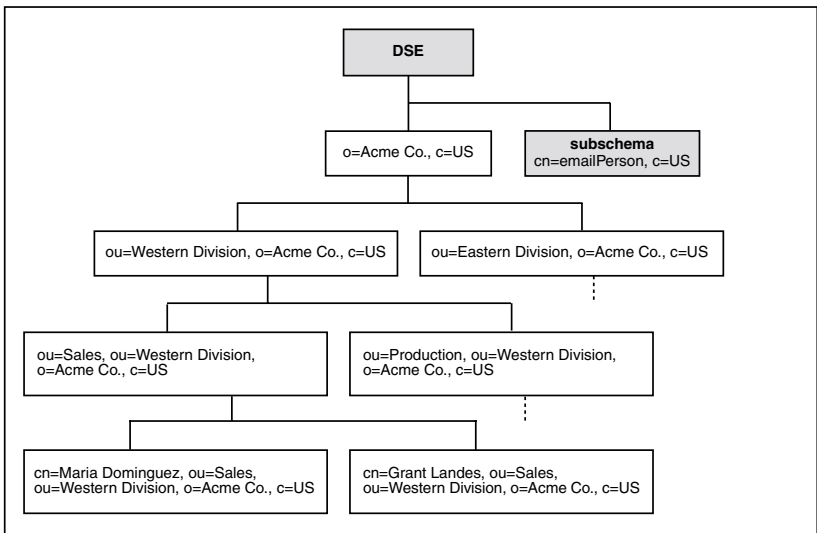
Tree directory

A directory may be organized in a tree structure, representing the divisions, departments, and people in an organization.

Advantages over flat: The tree directory allows two people to have the same full name, department listings can be created, it's a more organized way to manage a large directory. To illustrate, here is an example for a company, using a naming context of `c=US`.

At the top, the company itself has an entry. Instead of a common name, it has an organization name. Its distinguished name is `o=Acme Co., c=US`. It's entry type is *organization*.

- When entering a new entry, ClickMail defaults to using the common name in the distinguished name. When





Outline of a tree-structured directory. The naming context is “`c=US`.” The two shaded entries are required and automatically created in each new datafile (see Special Entries).

Understanding ClickMail and directories

entering the company, you would double-click Acme Co. in the attributes list to use the organization name instead. Also, you would change entry type in the attributes list.

The company has two divisions. These are represented by child entries whose parent is the company entry. Their distinguished names are *ou=Western Division, o=Acme Co., c=US* and *ou=Eastern Division, o=Acme Co., c=US*. Their entry type is *organizationalUnit*. The attribute used to name them, “ou,” stands for organizational unit (meaning organizational unit **name**). In ClickMail, this attribute is called “department/unit (ou).”

- To create these division entries in ClickMail, you would view the company entry, then click the add child button  to create a division entry. If you are viewing a child entry, the add button  creates a “sibling.”

Each division contains departments. The Western division has Sales and Production departments. To represent these, we use organizational units again (you can have any number of levels of them). Their distinguished names are *ou=Sales, ou=Western Division, o=Acme Co., c=US* and *ou=Production, ou=Western Division, o=Acme Co., c=US*. (The eastern division is left as an exercise for the reader.)

At last we can add some people! Maria and Grant work in the western sales department. Their distinguished names are *cn=Maria Dominguez, ou=Sales, ou=Western Division, o=Acme Co., c=US* and *cn=Grant Landes, ou=Sales, ou=Western Division, o=Acme Co., c=US* .

Formal X.500-style directory

If you know X.500, you know what you want. Check the Read Me file for any LDAP/X.500 features that may not be implemented in this version.

Other kinds of entries

Directories need not necessarily be for email addresses or even for people. For example, an LDAP directory may be used by programs on users' computers to look up file server IP addresses. Here are some other entry types that are used in LDAP/X.500 directories:

- organizationalRole
- residentialPerson
- applicationProcess
- applicationEntity
- device
- groupOfNames

Another kind of entry, type "alias," is used to refer to a single entry under a different name or from a different part of a tree-style directory. To create an alias entry, set the type to "alias" and add attribute "aliasedEntryName" which must contain the DN of the entry being aliased. To find all aliases to an entry, search for that entry's DN in the aliasedEntryName attribute. To understand the effect and use of aliases in LDAP, see RFC 2251.

User strategy: an example

It's worth considering how your users can best make use of the directory. Here's a possible set of directions—adapt this for your own situation:

1. As a new user, read all the entries from the central directory (search for "*"), or if that's too many, a set of useful entries, such as your department. Keep these in your email program's local address book for easy use.
2. If the person you want to mail to is not in your address book, search for their name in the central directory.
3. If some mail you sent bounces back, search the central directory for a new address.

Understanding ClickMail and directories

LDAP Write

Although most LDAP clients only search and read data from servers, LDAP includes a Write function for updating directory entries. ClickMail supports this function. LDAP Write is disabled by default in new datafiles.

To Enable LDAP write operations, from the Database menu choose Permissions. Under Write, check "Logged in Users." We recommend that you also define a permitted IP range for a little more security. Next, add a password to the entry(ies) of the person(s) who should be permitted write access. For write access, the client must log in with this person's Distinguished Name and password.

One publicly available Macintosh LDAP read/write client, MaX.500 from University of Michigan, can browse and edit existing entries, but not add new ones. Use the "non-UMich" install option, and set your directory and Searchbase options before searching (<http://www.umich.edu/~dirsvcs/ldap/max500/>).

ClickMail supports LDAP write operations Add, Delete, Modify, ModifyDN, and Abandon.

- **Warning:** There is no encryption or security protocol used with ClickMail's password login or write operations. Passwords can be easily revealed as they travel "in the clear" between client and server. If this server is used over the Internet, be aware that passwords, and therefore your LDAP data, are subject to interception and modification by outsiders. Do not use the same passwords used for other services such as email or FTP (although FTP passwords aren't secure either).

Client programs

Any LDAP-aware email software running on any OS (Mac, Windows, Unix) should be compatible with ClickMail.

Generic directions

1. Configure the client with the IP address or host name of the server where ClickMail resides.
2. Search for “*” to load all available entries into the local address list.
3. Search for specific entries by name and/or other attribute (if allowed by the client).
 - Special characters: client programs use several character sets for special characters (é, £, etc.). ClickMail does everything possible to detect which character set a client is using. For details, see the preference for Default LDAP Client Character Set.

Eudora Pro 4

- Use version 4.01 or later—4.0 searches don’t return any entries.
- Does not support user login; guest access only.

Setup

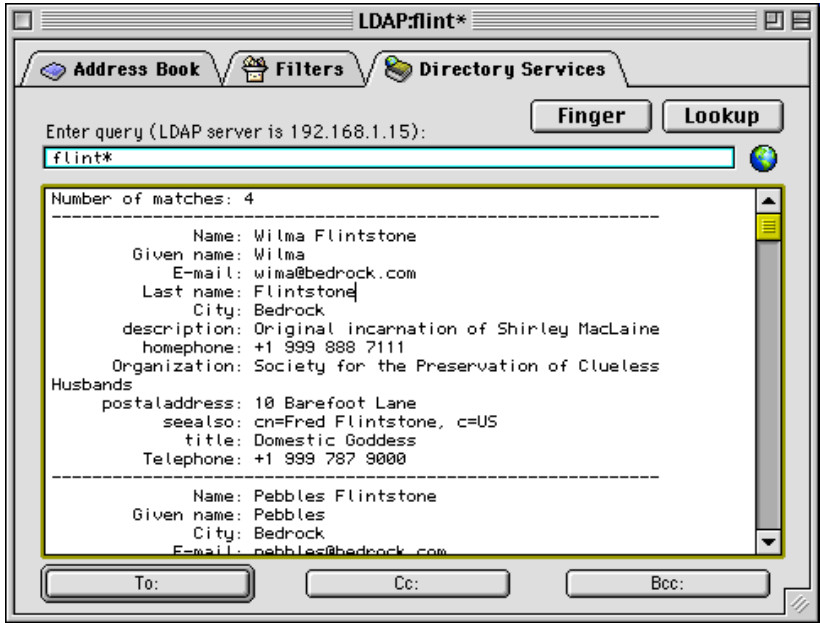
1. From the Special Menu, choose Settings.
2. Click the Hosts icon.
3. In the Directory Services field enter a URL for the Mac running ClickMail.

Examples:

ldap://ldap.mydomain.com

ldap://123.45.67.89

Client programs



Eudora Pro Directory Services window.

4. Click OK to save the settings.
5. Optionally, check “Live” directory service queries (for details, turn on balloon help).

Search

1. From the Window menu, choose Directory Services.
 - 2a. Live preference unchecked: In the “Entry query” field, type a full name, or part of a name with asterisks before and/or after as wildcards. (Example: Flin* finds “Flintstone, Flinny, or Flin.)) Press return.
 - 2b. Live preference checked: Type all or part of a name.
3. Returned entries are listed in the large scrolling field.

4. Click anywhere in an entry to select it. To send a message, click the To, Cc, or Bcc, button. To store the entry in your address book, from the Special menu choose Make Address Book Entry....
 - If you get an error saying the “Eudora LDAP Library” is missing, use Find File to search for a file by that name. It belongs in the Eudora Stuff folder (alongside the Eudora Pro application).

Mulberry

- Supports user login as of version 1.4.
- Supports multiple LDAP server choice as of 1.4.
- ClickMail and Mulberry have been reported to freeze on some Macs if Mulberry is running on the same Mac as ClickMail and does an LDAP lookup. There is no problem when run on a different Mac than ClickMail.

Setup

1. From the File menu, choose Preferences.... On the left side of the Preferences window, click Addresses.
2. From the Account pop-up, choose New.... Enter any name to refer to your ClickMail server. Click OK.
3. In the Server field, enter the host name or IP address of the Mac running ClickMail.

Examples: ldap.mydomain.com

123.45.67.89

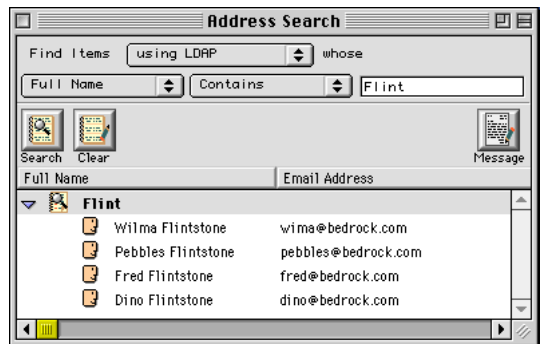
4. Leave Root blank. The other fields specify LDAP attribute names understood by your server. If desired, for Address, phone, and Fax, enter postalAddress, telephoneNumber, and facsimileTelephoneNumber.
5. To have all other attributes read and captured in the notes field, check the box Put Attributes in Notes.

Client programs

- Mulberry 1.3 searches all LDAP servers when you search, listing the results from each server separately. Therefore, another LDAP server may be searched before ClickMail. To avoid this, you may delete the Test Server or other LDAP accounts in the pop-up. Choose the other account from the pop-up, then choose Delete... from the pop-up.

Search

1. From the Addresses menu, choose Search.... This opens the Address Search window.
2. In the window, from the find Items pop-up, choose “using LDAP.”
3. Enter a full or partial name in the text field. If desired, change the Contains pop-up to another option.
4. Click the Search button. A list of returned entries appears under the name you entered, outline-style. If you search again, the results are added to the list under another entry header.
5. To see the details of an entry, double-click it.
6. To add an entry to an address book, drag it to an open address book (icon or window).
7. To address a message, from the File menu choose New Message. Drag any entry from the search list to the To or other field in the message window.



Mulberry Address Search window.

Netscape Communicator 4.5

- Does not support user login; guest access only.
- Uses standard attribute names (which are described in the LDAP protocol RFC 2256 and ITU-T X.521) when searching the directory. These include the following attributes: cn (common name), givenName (first name), sn (last name), mail (email), telephoneNumber (work phone), o (organization name), ou (department/unit), l (city/location), and street.
- Can display any and all user attributes by using an LDAP URL in the browser window. You can do this by double-clicking an entry in the Search Directory window (not the Address Book window). This function has been reported to freeze when Netscape is on the same Mac as ClickMail.
- Communicator Professional Edition may allow customizing of attributes used/displayed (see <http://developer.netscape.com/library/documentation/communicator/custom.htm>).

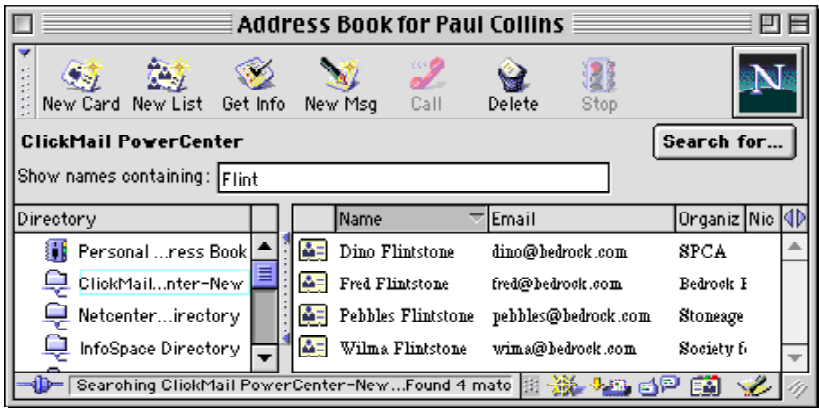
Setup

1. From the Communicator menu, choose Address Book.
2. From the File menu, choose New Directory. This opens the LDAP Server Properties window.
 - Older versions of Communicator do not have a New Directory command in the File menu. Add new directories under Edit->Preferences->Mail & Newsgroups->Directory, New (button).
3. In Description, enter “ClickMail Directory” (or whatever name suits you).
4. In LDAP Server, enter the host name or IP address of the Mac running ClickMail.

Examples: ldap.mydomain.com

123.45.67.89

Client programs



Netscape Communicator Address Book window.

5. You can leave the other fields as they are (Search Root blank, Port Number 389, etc.). Click OK. The Directory is added to the left pane of your Address Book. Select it.

Search (basic)

1. From the Communicator menu, choose Address Book. In the window's left pane, select the ClickMail directory you created above.
2. In the "Show names containing" field, type all or part of the name you want to find. Netscape searches for entries whose common name attribute contains your text. To retrieve all entries, enter an asterisk (*). Press return to search.
3. Select a name from the list that appears. Click the New Msg icon button to create a message to that person.

Search (advanced)

1. From the Communicator menu, choose Address Book. In the window's left pane, select the ClickMail directory you created above.

2. Click the “Search for...” button, which opens the advanced Search window.
3. Choose an attribute from the first pop-up menu, and enter a full or partial name in the text field. Or, select another attribute to search in. Use the More button to restrict your search using multiple attributes.
4. Click Search. A list of entries is retrieved from the directory.
5. Select one or more entries. To store in your personal address book, drag them there. To compose a message, click the New Msg icon button. To see all attributes for an entry, double-click it.

Outlook Express

Setup

1. From the Edit menu, choose Preferences.
2. On the left side of the window, choose Directory Services.
3. At the top, click the New Directory... button. In the New Account window which appears, enter a name for your reference. Click OK.
4. In Server address, enter the address of the Mac running ClickMail.

Examples: ldap.mydomain.com

123.45.67.89

5. Click the Advanced... button. Make sure Search base is empty and all the checkboxes are **unchecked**. Click OK. Then Click OK to close the Preferences window.
 - Making any changes to LDAP settings in Internet Config may alter your Outlook directory preferences and prevent it from working correctly. Leave Internet Config alone for now.


Client programs

- The “simple search” preference (under Advanced) limits the search to only cn and mail attributes. It’s not needed for ClickMail. In fact, this setting can be confusing to users, because a last name search won’t work unless the user enters an asterisk in front of the name.

Search

1. On the left side of the Outlook Express window, choose the ClickMail directory.
2. In the directory area, enter a full name or beginning of a name in the Search for Name field.
 - The Search for Name field actually searches numerous attributes for values that *begin* with what the person enters. To search for a substring anywhere in attributes, enter a leading asterisk (“*Smith”). Outlook displays the separate first and last name attributes rather than common name.
3. Click the Find button. A list of names is returned.
4. To address a message, select a name in the list, then click the Mail to: button (along the top of the window). This opens a message to that person. Discard the message when you’re done.

The screenshot shows the 'ClickMail Directory on Gee' search interface. It features a search bar with 'Fred' entered in the 'Search for Name' field. Below it is an 'E-mail' field and a 'Find' button. A 'Display names containing:' field is also present. The results are shown in a table with columns for Name, E-mail Address, Business Phone, and Home Phone. The first result is Fred Flintstone with email fred@bedrock.com and two phone numbers.

Name	E-mail Address	Business Phone	Home Phone
 Fred Flintstone	fred@bedrock.com	+1 999 888 0000	+1 999 922 2

Outlook Express directory pane.

5. To keep entries in your contacts book, drag them to the contacts icon at left.
6. To see more information about an entry, double-click it.
 - Outlook's contacts address book accepts a large number of attributes. You can include these in your entries to provide more information to Outlook users.

Fields supported by Outlook in contact view:

<u>Outlook field name</u>	<u>ClickMail name(s)</u>
LastName	last name, common name
FirstName	first name
EmailAddressDefaultFieldID	email
BusinessCompany	organization name
BusinessCountry	country
BusinessDepartment	department/unit
BusinessFax	fax
BusinessPager	pager
BusinessPhone	work phone
BusinessState	state
BusinessStreetAddr	postal address, street
BusinessTitle	title
BusinessZip	zip/postal code
HomeWebPage	URL
HomePhone	home phone
HomeCellular	mobile
HomeStreetAddr	home address
Notes	comment

- In some cases, more than one attribute maps to the same field. If a server returns results with attributes that map to the same field in the contact entry, Outlook uses the attribute listed first above. Not all fields in Contact Manager have corresponding ClickMail/LDAP attributes.

Client programs

QuickMail Pro

- Supports user login as common name only. ClickMail compares the password (userPassword) of the first entry found that has a matching common name.
- In addition to simple search, a powerful query-builder with direct access to the query formula is included.
- The current versions of ClickMail and QuickMail Pro have been reported to freeze on some Macs if QuickMail is running on the same Mac as ClickMail and does an LDAP lookup. There is no problem when run on a different Mac than ClickMail.

Setup

1. From the Tools Menu, choose Directory Services. A small dialog appears. From the pop-up menu, choose LDAP Plug-in. Click Configure.
2. A list of services appears. Click Add.
3. In the Directory Information window, in Profile Name, enter a name for your directory.
4. In LDAP Server Address, enter the address of the Mac running ClickMail.

Examples: ldap.mydomain.com

123.45.67.89

6. Leave the other fields as they are. Click OK, then click Done.

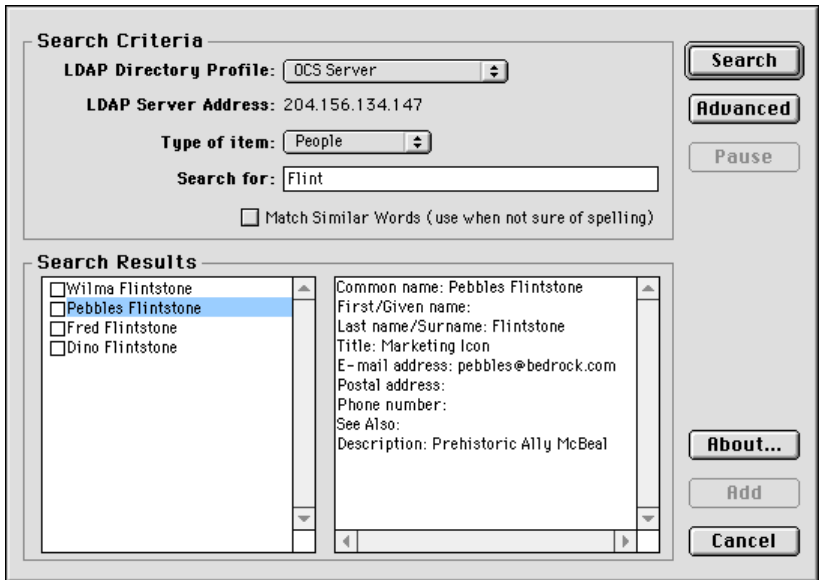
Search—Address Message

1. In the QuickMail Pro window, click the New button. In the select form dialog, click OK. A message window appears.
2. From the Message menu, choose Address.... In the address window, click Find.

3. The search window opens. Make sure the LDAP Directory Profile is your ClickMail directory. In Search For, enter the full or partial name to search for.
4. Click Search. Entries appear in the Search Results list. Click a name to see details.
5. Check a box next to one of the names, and click Add. That person's name is now in the To field. Click OK.

Search—Add to Address Book

1. From the Configure menu, choose Address Books....
2. Select an address book from the list and click Edit....
3. In the address book window, click Find. The search window opens.



QuickMail Pro search dialog.

Client programs

4. Make sure the LDAP Directory Profile is your ClickMail directory. In Search For, enter the full or partial name to search for.
 - Or, click Advanced for a more complex search. Enter values for one or more attributes. When you click OK, a standard LDAP search query is placed in the Search For field.
5. Click Search. Entries appear in the Search Results list. Click a name to see details.
6. Check a box next to one or more names. Click Add. Those entries are placed in the Address Book. Click OK.
 - To check all names at once, option-click any box (Mac only).

Sherlock 2 and Network Browser

Mac OS 9 includes two LDAP-aware clients: Sherlock 2's People channel and the Network Browser. For complete information on using these clients with ClickMail, visit our special guide on the Gracion Software web site (<http://www.gracion.com/server/sherlock/>).

Export/Import

ClickMail can import and export LDIF and tab-delimited text files, and import from vCards. LDIF and vCard files contain attribute names and data on multiple-line records. Tab-delimited files are imported and exported by specifying a list of fields in ClickMail. For most purposes, the built-in standard list of attributes works well.

To import a file, either choose the appropriate format under Import in the File menu, or drag and drop the file(s) on ClickMail's icon in the Finder.

- Entries are indexed as they are imported. This requires short delays which may appear to freeze the Macintosh. Other applications are momentarily suspended. A status window shows when this is in progress.

Character set encoding

Tab-delimited and LDIF text files are presumed to be encoded in Mac OS Roman, the normal character set used on Macintosh. Files to or from Windows systems encoded in Latin-1 (ISO-8859-1) may be translated with software such as MacLinkPlus. Translation is not needed unless accented characters are present in the file. Mac OS Roman, Latin-1, and UTF-8 all have the same encoding for “regular” (US ASCII, or 7-bit) characters.

vCards are presumed to use Latin-1 (ISO-8859-1) encoding.

Tab-delimited format

Multiple values in one attribute are delimited by vertical tab characters, to allow manipulation in FileMaker.

Minimum fields: If your tab-delimited data contains at least these minimum fields, you can import directly into ClickMail Central Directory. ClickMail creates other necessary fields (for example, a missing distinguished name attribute is

Export/Import

created from any name information in the imported entry, with the naming context from the DSE added). If common name or first and last name fields are missing, these are created as well.

Minimum field requirements

- Full name (common name) **or** first name and last name (2 fields)
- Email address

Standard fields. A list of commonly used fields can be used to create a repeatable tab field order. To set the field list, from the Lists menu choose Standard Fields.

LDIF

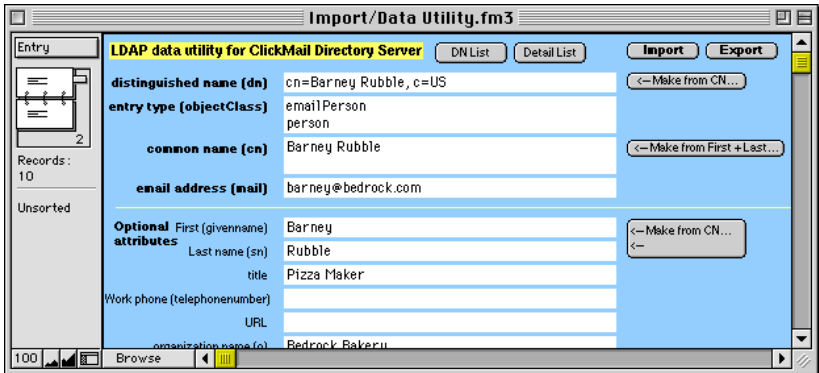
LDIF (LDAP Data Interchange Format) is the standard text format for LDAP servers. This format consists of attribute names and values, one value per line, with a blank line separating entries. An advantage of this format over tab-delimited is that there is no need to map attribute names with a separate list; the names are right there in each entry. ClickMail can import and export this format.

vCard

vCard is a popular format for “electronic business cards.” One vCard file contains one entry. Clickmail translates vCard data labels into their LDAP equivalents, which are included in our standard emailPerson entry type. A vCard can create one new attribute type: if it includes a name prefix (“Dr.,” “Mr.,” etc.), it is imported with the attribute name “salutation.” ClickMail can import this format.

Import/Data Utility

A FileMaker “Import/Data Utility” template is included to assist you in preparing and maintaining your entries. If you have FileMaker Pro 3.0 or later, you can import data into the



Import/Data Utility entry view (a FileMaker Pro 3 template).

template, manipulate it, and export it in a format that can be directly imported into your LDAP directory.

- You can often import tab-delimited data directly from other sources into ClickMail, even without distinguished names. See “minimum fields” above.

Importing from other sources with the Import/Data Utility template

Click the Import button to import tab-delimited, comma-delimited, SYLK, DIF, WKS, BASIC, Merge, Edition File, DAM, ClarisWorks, or DBF format files. The fields are named for the common attributes, with 4 “other” fields at the end for other attributes. (Note: Do not import into fields named “Global...”)

Manipulate your imported data as desired in FileMaker. Scripts are provided to auto-create distinguished names, common names, first and last names. (ClickMail can auto-create these as well, but in the template you can select groups of entries to work on.)

For multiple values in an attribute, put each value on a separate line.

Export/Import

Scrolling fields are provided for entry type (objectClass) and common name (cn), but any field may use multiple lines. Note: Multiple values are not legal for some fields under LDAP standards.

For data manipulation we haven't anticipated, use FileMaker's many functions. Get to know the Replace function, a versatile tool.

When the data is ready for ClickMail, use the Export button to export the data to a tab-delimited file. The default field order here is the same as ClickMail's "Standard" field order (see Lists menu), but you can override the order if needed.

Note: If you are importing tree-structured entries into the ClickMail directory, a child entry can only be imported if its parent entry exists or was imported earlier. A parent's distinguished name is that of the child's after deleting the first attribute. Consider the order in FileMaker before you export.

In ClickMail C.D., choose Import—Tab-delimited... and select your file. Use the standard order or whatever order you exported with in FileMaker. If any imported entry has the same distinguished name as an existing entry, the existing entry is replaced.

Check your new entries by choosing Entries... from the Database Menu.

Importing with Drag-and-drop or AppleScript

Tab-delimited, LDIF, or vCard files may be imported by dragging them to the ClickMail application icon in the Finder. With drag-and-drop, ClickMail recognizes the format automatically.

An AppleScript can import files into ClickMail, using the command "open" followed by an AppleScript file reference. A simple AppleScript example file is in the ClickMail folder.

This version of ClickMail supports only open, run, and quit AppleScript commands.

When a tab-delimited file is imported via drag-and-drop or AppleScript, ClickMail looks in the folder containing that file for a file called “ClickMail Field List”. If a ClickMail Field List is found, ClickMail uses it to define the field order when importing. If a List is not found, ClickMail uses the last field list that was used to import.

Modifying your directory data offline

To make multiple or global changes that would be time-consuming in the Entry window, you may export your entries from ClickMail, modify them offline, then import them back into ClickMail. You may export in LDIF format and edit in a text editor, or use Tab-delimited format to bring the data into FileMaker and work with it there.

When re-importing tab-delimited data, be sure the field list shown when you choose Import... matches the tab-delimited file.

- If you do not include all attributes in your directory’s entries when you export and import, you may delete attributes from existing entries in your directory when you reimport them. To eliminate this possibility, You can use the “Current” setting when you export, which ensures that all existing attributes are exported (Lists menu—Current Database Attributes). However, to bring this file into the FileMaker template, you must drag the fields into proper order when you import.

Here’s the step-by-step procedure:

1. From the File menu, choose Export—Tab-delimited.... This exports all records (except the DSE). Unless you have non-people records (such as “ou” department records), use the default setting of “Export People Only”. Use the Standard attribute list (Lists menu) unless you have other

Export/Import

attributes not on the list (in that case, try the “Current” list).

- Here’s another way to see all attributes in use: From the Database menu choose Attributes....
2. Open the Import/Data Utility in FileMaker. Click the Import button.
 3. The default field list matches the “Standard” list in ClickMail. Make changes by dragging if you used Current or your own list. (Note that the little arrows must be on for each field you want to import.) When the list is correct, click “Import”.
 4. Modify your data as desired in FileMaker. Scripts are provided to auto-create distinguished names, common names, first names and last names.
 - If you will be reimporting back into the same datafile, you may delete entries which you are not changing (such as the subschema entry, “emailPerson”).
 5. Export to a new tab-delimited file. If you used a special field order when you imported, choose Export Records from the File menu to export in the same order (check the pop-up menu for “Last Order”). If you are using the standard order, click the Export button instead.
 6. In ClickMail, you may either import into the current datafile or start a new file. (For example, a new file would be needed if you changed some distinguished names). To start a new file, from the File menu choose Configure..., click New, name the file, click Save, enter any other settings, then click OK.
 7. In ClickMail, from the File menu choose Import—Tab-delimited.... The last-used field order is displayed (even if you are working in a new datafile). Choose the appropriate field order and import your data.

- If reimporting into the original datafile, each imported entry replaces its matching existing entry. ClickMail identifies matching entries by comparing the distinguished name.
8. Check your new entries by choosing Entries... from the Database Menu.

Permissions and security

- **Warning:** Only password-protected encryption gives strong security to Internet services such as a directory server. Encryption (such as SSL) is **not** currently available with ClickMail. The protections below give lesser, but still useful, security options.

Database permissions

Database permissions apply to the database as a whole, by controlling whether a user can log in or search. Where a user is denied by database permissions, that user cannot log in or search.

To allow access by client programs, choose Permissions from the Database menu. Set the permissions according to directions for the **Permissions Window**, below.

- **Warning:** When permissions are enabled, anyone who can connect via TCP/IP to the server running ClickMail can read data from the directory via LDAP. This may include everyone on the Internet. If you wish information in the directory to be shown only to users inside your company, use the IP Address range setting. This does not guarantee that no one can possibly access your data outside the company, but it provides some security. You should have a working knowledge of Internet security when setting up any Internet protocol server.

The default for new directories is **no** access. That is, you must set permissions for the directory before anyone can read from it.

Attribute permissions

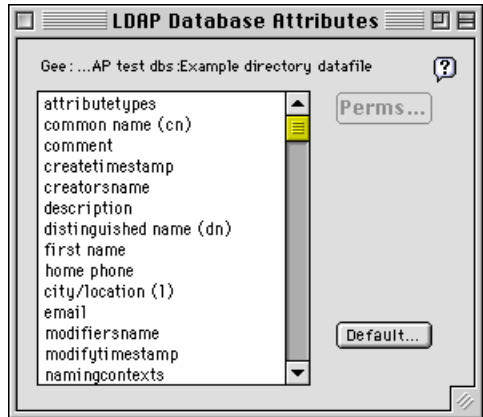
Each attribute may have its own permission setting, thus restricting whether it is returned in client searches. When first created, all attributes follow the Default Attributes

Permissions, until and unless you specifically change the permissions for that attribute. When created, the default attributes permission is Read–Everyone.

- Exception: the “password” (LDAP term: userPassword) attribute is created with a permission of no access. Even though it cannot be read, it can still be used for client log ins and compare operations.

Attributes window

To restrict access to certain attributes, choose Attributes from the Database menu. This opens the Attributes window, which lists all attributes that exist anywhere in the directory.



Attributes window

To set permissions for a specific attribute, select it in the list and click Perms.... This opens a Permissions window for that attribute.

To set default permissions for all attributes, click the Default button. This opens a Permissions window for default attribute permissions.

- New attributes are added automatically when you edit or import entries. A new attribute has the default attribute permissions unless you set permissions for that specific attribute.

Permissions window

This window is used to set access for one attribute or the entire database. Currently, read-only access by client programs is supported by ClickMail, so the Permissions window contains settings for read access.

Permissions and security

Types of Read Access

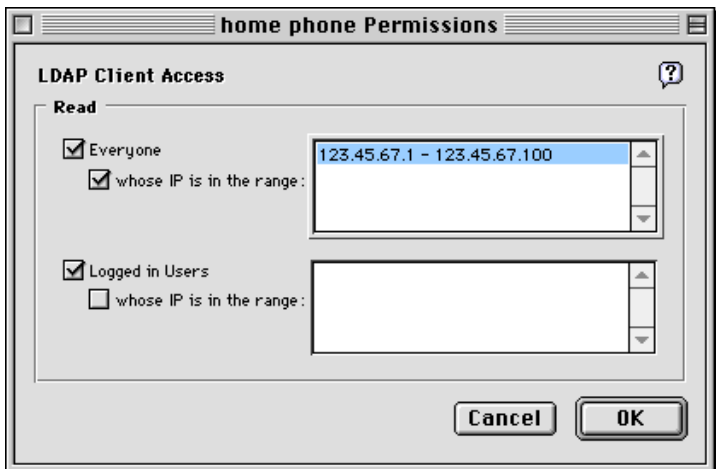
Everyone: Check this box to grant this permission (database, attribute, or entry) to everyone, without requiring that they log in with a password (“anonymous” access).

“whose IP is in the range:” To allow only users from within a range of IP addresses, check this box. In the text field enter a minimum and maximum IP number on one line separated by a space and/or hyphen. You may enter as many ranges as you wish. Attempts to access (the database, attribute, or entry) from outside these IP addresses are not permitted.

Example: 123.45.67.1 - 123.45.67.100

Logged in Users: Check this box to grant this permission to users who log in with a password (which matches their password attribute value).

“whose IP is in the range:” To allow only logged-in users from within a range of IP addresses, check this box. In the text field enter a minimum and maximum IP number on one line separated by a space and/or hyphen. You may enter as many ranges as you wish. Attempts to log in with a password



Permissions window, used here to limit access to the “home phone” attribute

(or once logged in, access the attribute or entry) from outside these IP addresses are not permitted.

- Some client programs can log in with a name and password . Currently, this is done “in the open” over your network or the Internet (depending on where the client and server are). This provides a very small amount of security and control over who can view restricted attributes. Encryption of passwords or data is not available with this version of ClickMail.
- “Everyone” access includes logged in users. That is, a user may log in with a password even if logged in access is not enabled, *if* they meet the requirements for “everyone” access (such as an IP address range). “Everyone” means everyone. Logged in access settings allow access by a user with the right password where anonymous (everyone) access is not allowed.

LDAP Write Access

For LDAP clients that support updating entries (such as maX.500), LDAP Write Access controls which clients may make changes to LDAP entries. Only logged in users may make changes. Like Read Access, Write permissions may be limited by IP range.

User passwords

LDAP person entries may include a **password** attribute (LDAP term: userPassword). The value(s) of the password may be used to authenticate LDAP users, and users of other services that use the LDAP Compare request. Permissions for the password are turned off by default, so that it is not returned in LDAP searches. The password is visible locally when editing entries in ClickMail, and also in remote web administration.

In AppleShare mirror mode, a mirror entry’s password, when present, is synchronized with AppleShare user password. By default, the password is only copied from AppleShare during

Permissions and security

synchronization if a password attribute already exists in the mirror entry. To have all mirror entries add passwords from AppleShare, under ClickMail Preferences check “Copy passwords from ASIP Users & Groups.” If more than one password value is present in the mirror entry’s attribute, only the first value is synchronized with AppleShare. This makes it possible to have an LDAP password that is different from the AppleShare password.

Remote Web Administration

The XL version of ClickMail supports remote administration using a web browser. This feature requires Netscape Navigator 4.0. Remote administration may be run through a regular or secure encrypted (SSL) web server. After a password-protected login, the administrator may add, edit, and delete entries, and change permissions for the directory or attributes.

Installing Web Administration

Requirements:

- **Server:** Any Macintosh web server, including AppleShare IP or Mac OS 8 Personal Web Sharing. A web server with SSL encryption is recommended (such as WebStar or Quid Pro Quo SSL versions).
- **Client:** Netscape Navigator 4.0 or later (including Netscape Communicator), with JavaScript turned on.

Installation:

1. Locate the “cmweb” folder which was installed with ClickMail. Place this folder in any folder served by your web server. For example, the default shared folder for Personal Web Sharing is “Web Pages” at the top level of your hard disk.
 - The next step depends on whether your web server supports Finder aliases. Personal Web Sharing 1.5 and AppleShare 6.x support them, PWS 1.1 and AppleShare IP 5 do not.
- 2a. If your server supports aliases, make an alias of the ClickMail C.D. application (Finder, File menu). Place the alias in the web server folder, alongside the cmweb folder (**not in** the cmweb folder). Rename the alias “clickmail.acgi”—this tells the web server to treat it as a program instead of a document. Enable aliases in your

Remote Web Administration

web server's preferences
(Personal Web Sharing 1.5: open
the Web Sharing control panel,
then choose Preferences... from
the Edit menu).



- 2b. If your server does not support
aliases, place the ClickMail C.D. application in the web

Personal Web Sharing and permissions

The Web Sharing control panel gives you two options for
setting web client permissions:

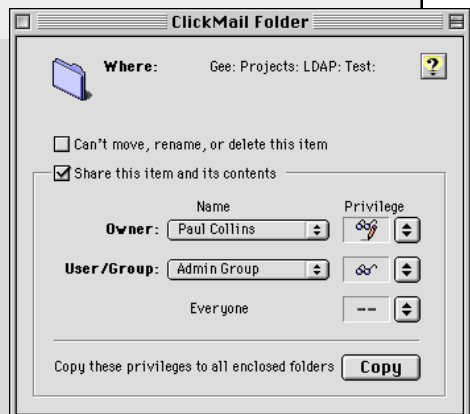
Give everyone read-only access. Anyone can connect to
your Mac, browse the shared folder, and, if they have an
administrator password, use ClickMail Web
Administration. This option is simple and easy to use.

Use File Sharing to control user access. Only folders that
have their Sharing set in the Finder can be accessed by
web browsers. You can require a password through the
Users & Groups control panel (also used for regular Mac
OS AppleShare file sharing).

- If you use an alias to the ClickMail application, you
must set sharing for the folder that contains
ClickMail, not just the alias.

For details on setting
up Personal Web
sharing, see the
document "Using
Personal Web
Sharing.html" in your
Web Pages folder.

Personal Web Sharing 1.1
shipped with Mac OS 8.0/
8.1. PWS 1.5, with
enhancements including
alias support, is available
from [http://
swupdates.info.apple.com/](http://swupdates.info.apple.com/)



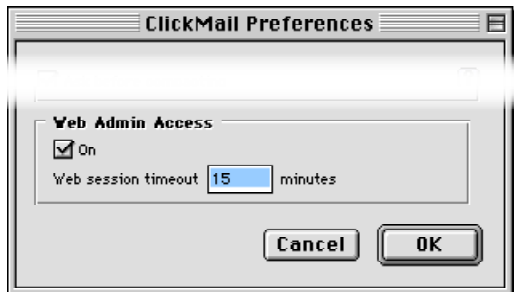
Remote Web Administration

server folder, alongside the cmweb folder. Rename the application “clickmail.acgi”.

- The application or alias and the cmweb folder must be at the same level of the same folder, as shown.
3. Set permissions for your web server so that you can access both ClickMail and the cmweb folder via the web. Read-only access is sufficient. Refer to your server’s documentation for instructions (for Personal Web Sharing, see box on previous page). You may set web server permissions to require a password or allow guest (no-password) access to the folders.
 - If you password-protect your folders with your web server, you’ll benefit from two levels of authentication: (1) the web password to the folders, and (2) the administrator password for ClickMail.

Configuring ClickMail for web administration

- Web administration login is password protected, and limited to designated administrators. To have access, you must become an administrator in ClickMail.
1. To enable web administration, choose Preferences... from the Edit menu. Under Web Admin Access, check the On checkbox. If desired, change the web session timeout. This sets the time that ClickMail waits after the latest web administration command before automatically ending the session. After the session ends, the administrator must log in again to do more work.



Remote Web Administration

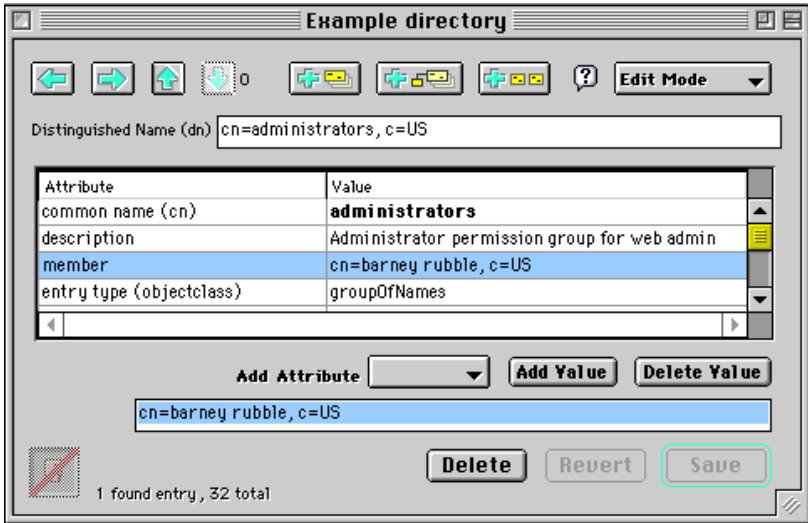
2. In your own entry, add a password attribute with your administrator password (choose “password” from the attributes pop-up menu). Save your entry.

- **Warning for AppleShare IP integration:** When ClickMail is run in AppleShare mirror mode, password attribute values are also set in AppleShare. If you enter a different password in ClickMail, you are changing your AppleShare password! If you are the AppleShare IP administrator, you need this password to access local AppleShare IP Web & File Admin. ClickMail itself must have an AppleShare IP Administrator password to connect to AppleShare. *Do not unknowingly change or forget your administrator password.*

If you want to use a different password for web administration than your AppleShare password, enter your AppleShare password in the password attribute, then click Add Value. Enter your web administration password as the second value. Either value can be used for web administration logins, but only the first value is stored in AppleShare.

In AppleShare mirror mode, the synchronization function updates passwords only in ClickMail entries that already contain a password attribute, unless the “Copy passwords from ASIP Users & Groups” preference is checked. Only the first password attribute value is updated.

- **Security note:** Your password is not encrypted or secure when you log in **unless** you run ClickMail under SSL encryption provided by your web server and browser.
3. From the Entries menu, hold down the option key and choose Add Group.... This creates an “administrators” group entry with the correct name and attribute values. The distinguished name for this entry must be “cn=administrators” followed by your naming context (usually “c=US”).



Group entry "cn=administrators" specifies the web administrator(s).

- In the administrators entry, select the "member" attribute. From the Entries menu, choose Paste DN.... Double-click your name in the list that appears, which enters your distinguished name as a member. Save the entry.

Using Web Administration

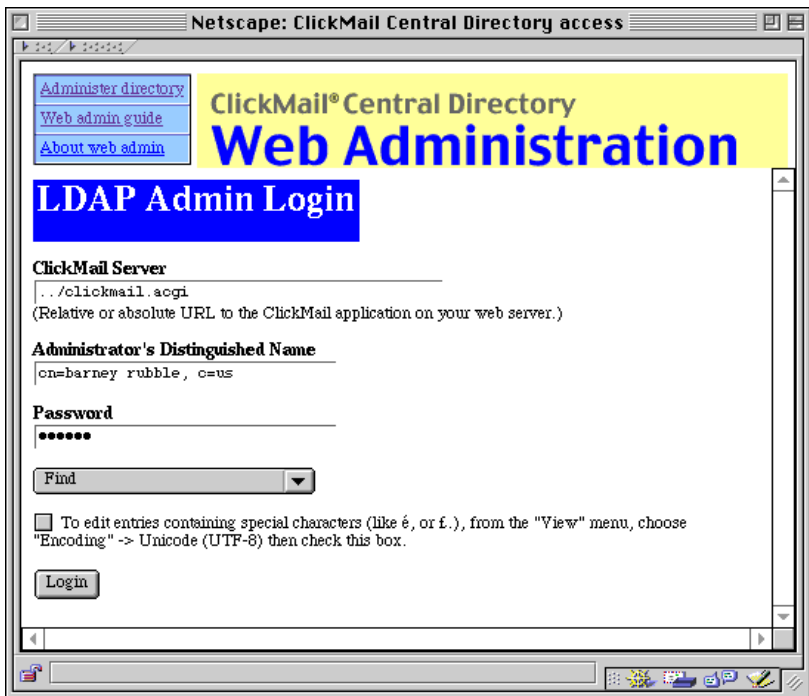
Logging in

- Open your Netscape 4.x web browser and go to location cmweb/index.html on your web server. For example, if cmweb and clickmail.acgi are at the top level of your web folder, you would enter URL "http://www.myserver.com/cmweb/index.html". You may use a numeric IP address instead of the domain name ("http://123.45.67.89/cmweb/index.html").
 - Bookmark this URL for future web sessions.
- If web server has password protection set for the folder containing cmweb and ClickMail, you will see the standard web browser authentication dialog. Web folder

Remote Web Administration

authentication is separate from and unrelated to ClickMail Web Admin login and password, which is handled in a web page form. If required, log into the folder.

3. The ClickMail Web Administration heading and information page appears. The information page contains directions for web administration functions. To open the information page in a separate window, click the heading link "Web admin guide" such that you get the pop-up menu (Macintosh: click and hold). Choose "New Window with this Link" from the pop-up menu.
4. Click the heading link, "Administer directory." This opens the login page, a web form containing several text entry fields and buttons.



Web administration login page.

5. The ClickMail Server field contains the URL to the ClickMail program or alias. If you have installed as described above, the default value, “../clickmail.acgi” is the correct URL to open ClickMail.
6. In Administrator’s Distinguished Name, enter the distinguished name of your administrator entry, including any naming context. This entry must be listed in the member attribute of the administrators group entry (created above).
7. In Password, enter the password for your administrator entry. ClickMail compares this to the password attribute in the entry under the distinguished name in step 6.
8. From the pop-up menu, choose the first action you would like to take:
 - Find:** Opens a find mode page for searching the directory.
 - Entries:** (Edit Mode) Opens an entry page, similar to opening the Entries window in the local ClickMail interface.
 - Browse:** Enters browse mode, which lists all top entries of the directory on one page.
 - Directory Permissions:** Opens the permissions settings page for the entire directory.
 - Attribute Permissions:** Opens the attribute selection page for setting attribute permissions.
 - In this version, permissions may only be accessed from the login page.
9. If your directory contains special characters in any attribute (such as é, or £), you must tell ClickMail and Netscape to use a special character encoding. From Netscape’s View menu, Encoding submenu, choose “Unicode (UTF-8)” and check the checkbox on the web form for this encoding. Netscape must be operated with UTF-8 encoding to avoid corrupting special characters when entries are edited. If your database contains no

Remote Web Administration

special characters (all values are plain US ASCII), you may operate in Netscape's default encoding, called "Western (ISO-8859-1)".

- "Western" encoding does support the *display* of special characters. However, special characters in web edit fields are corrupted upon submission of an entry to the server. Even if you are editing a different attribute, any attribute that contains special characters in that entry is corrupted when you submit the change. Viewing under "Western" is okay only if you can completely resist the temptation to change an entry (or if you have no special characters in the entries).

To change encodings during a web session, return to the login page, check or uncheck the box, choose the encoding in Netscape, and log in again. Do not change Netscape's encoding unless you are on the login page.

When working in UTF-8, do not resize the window—this may corrupt special character values in the browser. If you see square root symbols ($\sqrt{\quad}$) where your special characters used to be, you are looking at improperly decoded UTF-8. Click Cancel and start editing the entry again.

UTF-8 mode may also cut off the bottom of pop-up menus, especially the Attributes menu. As a workaround, choose Other... and type in the attribute name (one of ClickMail's "English" names as shown in the local entries window pop-up menu).

10. Click the login button. ClickMail validates your login and displays the page requested by the pop-up menu.
 - If ClickMail is not already running, the web server launches it in response to the login request. ClickMail keeps running until it is quit locally on the server.
 - If you plan to run more than one web admin session at a time, be aware that ClickMail does not lock entries that web clients may be editing. Changes may be lost if

two administrators work on the same entry at the same time. Also, only one session per IP address is allowed.


Edit Mode

To view, edit, add, or delete entries, use edit mode. To enter this mode, from the login pop-up menu choose Entries, or from other pages' mode pop-up menu choose Edit mode.

Edit mode corresponds the Entries window in ClickMail's local interface. As in the local window, each entry is "live:" any changes made to an entry are stored simply by choosing a command to view, find, or browse other entries. The Submit button, which saves the current entry, does not have to be used.

- Do not use the browser's back button or command while working in web administration. Going back does not get you anywhere useful. If you have a problem or

Directory Server Administration


Edit Mode ▾

DN: `cn=Joe Rockhead, c=US`

Attribute:	Value:	
entry type (objectclass)	emailPerson	+ -
entry type (objectclass)	person	+ -
entry type (objectclass)	top	+ -
common name (cn)	Joe Rockhead	+ -
email	joe@bedrock.com	+ -
first name	Joe	+ -
last name (sn)	Rockhead	+ -
New Attribute: ▾		
<input type="button" value="Reset"/> <input type="button" value="Cancel"/> <input type="button" value="Delete entry"/> <input type="button" value="Submit"/>		

16 total

Viewing an entry in edit mode.

Remote Web Administration

get an error page, click the “Administer directory” link in the heading and log in again.

Navigation controls for edit mode are at the top of the page. Use the arrow buttons to go to other entries, just like the local interface. To switch to Find Mode or Browse Mode, choose from the mode pop-up menu. As in the local interface, **any changes to the current entry are saved when you go to another entry or mode.**

To add or remove an attribute value, click the plus or minus icon next to a value. To add a new attribute, choose it from the New Attribute pop-up menu. To add an attribute that is not in the menu, choose Other... and enter the attribute name in the Attribute column, alongside the new value.

The distinguished name (dn) of an entry uniquely identifies that entry in the directory. The attribute value that makes up the first part of the dn has a bold attribute name. The dn may be changed by changing the value of that attribute. To use a different attribute value as the first part of the dn, click the “DN:” label (upper left of the page, next to the distinguished name). This opens a separate window. Choose the attribute and value you want to use for the distinguished name.

- *How it works:* Editing an entry is handled locally in the browser (using JavaScript), so that the server does not have to be accessed every time you click on something. When you leave an entry that has been changed, it is sent to the server.

To reset attribute values to their previous values, click the Reset button—however, this does not undo the adding or deleting of attributes. To cancel all changes made to the current entry, click the Cancel button. The original entry is displayed.

To delete the current entry, click the Delete entry button. Entries with children may not be deleted unless you first delete their children.

To store changes to the current entry, click the Submit button. Or, click one of the entry arrow buttons, the add entry or add child buttons, or choose a different mode from the mode pop-up menu. Changes are **not** saved if you close the window, click a link in the heading, type in a new URL, use a bookmark, or use the browser's Back, Forward, or other navigation commands.

To create a new entry, click the add button or add child button at the top of the page. A blank entry based on ClickMail preset emailPerson entry is created. Fill in or add any attributes desired, then click Submit, an add button, an arrow button, or choose a new mode. Any attributes with blank values are stripped from the entry before it is saved.

- *AppleShare mirror mode and entries:* When the directory is an AppleShare mirror, an extra item appears at the bottom of the entry page. Existing entries display an AppleShare user icon that is crossed out or not depending on whether this is an AppleShare mirror entry. To set a whether a new entry becomes an AppleShare entry or not, check the "Is this an AppleShare IP user or group?" checkbox (or not). This must be done before the entry is first saved. Group entries in AppleShare are not actually created by this version of ClickMail.

Find Mode

To locate an entry or to list entries sharing a common name or attribute, use Find mode. To enter Find mode, choose it from the mode pop-up menu at the top right of all web administration pages, or from the pop-up menu on the login page.

Find mode displays a blank entry listing all attributes that exist in the directory. Enter values into one or more attributes. The values are treated as substrings. If you want an exact value, type an equal sign in front of the value ("=Smith").

Remote Web Administration

Directory Server Administration

← → ↕ ↗ ↘

Find Mode ▾

Enter values in one or more attributes. Entries that contain all values (substrings) are returned.

Attribute:	Value:		
attributetypes	<input type="text"/>	+	-
common name (cn)	<input type="text"/>	+	-
distinguished name (dn)	<input type="text"/>	+	-
first name	<input type="text"/>	+	-
home phone	<input type="text"/>	+	-
city/location (l)	rock	+	-
organization name (o)	<input type="text"/>	+	-
entry type (objectclass)	<input type="text"/>	+	-
objectclasses	<input type="text"/>	+	-
postal address	<input type="text"/>	+	-
see also	<input type="text"/>	+	-
last name (sn)	=Flint	+	-
subschemasubentry	<input type="text"/>	+	-
work phone	<input type="text"/>	+	-
title	<input type="text"/>	+	-
password	<input type="text"/>	+	-
member	<input type="text"/>	+	-

Reset Cancel Submit

16 total

Find mode, finding entries whose last name is exactly "Flint" and whose city contains "rock".

If you enter values in several attributes, only entries that contain all the values are returned (this is a boolean AND of the values). Searches are not case sensitive. Accented letters in entries are a match for their plain text equivalents you enter in find mode ("e" finds "é," "ê," etc.).

When you have entered your search terms, click the Submit button at the bottom of the page. ClickMail returns a list of entries that match what you entered (this is different from

4 found entries, 16 total

	distinguished name	entry type	email	children
	cn=Dino Flintstone, cn=Wilma Flintstone, c=US	emailperson	dino@bedrock.com	
	cn=Fred Flintstone, c=US	emailPerson	fred@bedrock.com	
	cn=Pebbles Flintstone, cn=Wilma Flintstone, c=US	emailperson	pebbles@bedrock.com	
	cn=Wilma Flintstone, c=US	emailPerson	wilma@bedrock.com	2

Entries in List mode returned by a search.

the local interface, which does not have a list mode). If no entries are found, the search page is returned so you can try again.

List Mode

A successful find returns a list of found entries. To view and edit any entry, click the left arrow for that entry in the list. To list the children of a found entry, click the down arrow for that entry.

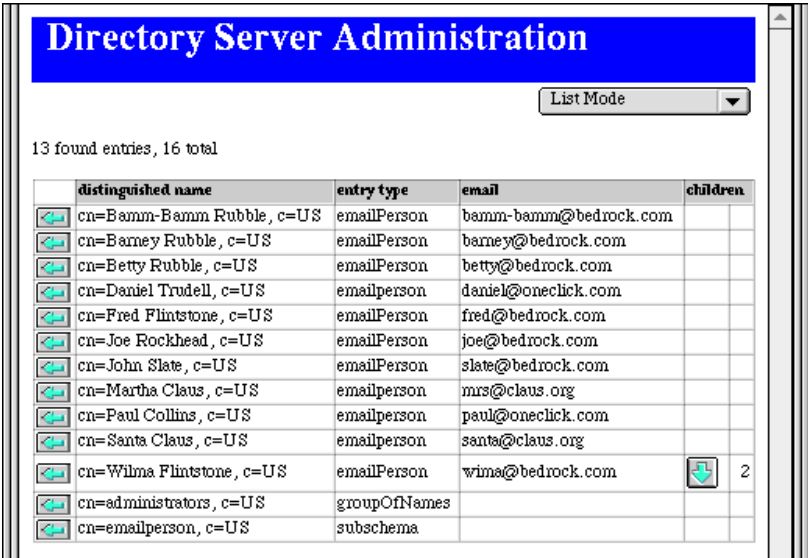
To return to Find mode or enter Browse mode, use the mode pop-up menu at top right of the page.

When you go from a list to an entry (in Edit mode), a “List” arrow button is added to the entry page. To return to the list, click the list arrow.

Browse Mode

Browse mode is a special list mode that allows browsing through the entire directory in list form. To enter Browse mode, choose it from the mode pop-up menu at the top right of most web administration pages.

When you enter Browse mode, it lists all entries at the top of the directory tree. If your directory is “flat,” this lists all entries.



The screenshot shows the 'Directory Server Administration' web interface. At the top, there is a blue header with the title 'Directory Server Administration'. Below the header is a 'List Mode' dropdown menu. The main content area displays '13 found entries, 16 total'. A table lists the entries with columns for 'distinguished name', 'entry type', 'email', and 'children'. Each row has a left arrow icon for navigation and a right arrow icon for children. The entry 'cn=Wilma Flintstone, c=US' has a right arrow icon and the number '2' in the 'children' column.

	distinguished name	entry type	email	children
	cn=Bamm-Bamm Rubble, c=US	emailPerson	bamm-bamm@bedrock.com	
	cn=Barney Rubble, c=US	emailPerson	barney@bedrock.com	
	cn=Betty Rubble, c=US	emailPerson	betty@bedrock.com	
	cn=Daniel Trudell, c=US	emailperson	daniel@oneclick.com	
	cn=Fred Flintstone, c=US	emailPerson	fred@bedrock.com	
	cn=Joe Rockhead, c=US	emailPerson	joe@bedrock.com	
	cn=John Slate, c=US	emailPerson	slate@bedrock.com	
	cn=Martha Claus, c=US	emailperson	mrs@claus.org	
	cn=Paul Collins, c=US	emailperson	paul@oneclick.com	
	cn=Santa Claus, c=US	emailperson	santa@claus.org	
	cn=Wilma Flintstone, c=US	emailPerson	wilma@bedrock.com	2
	cn=administrators, c=US	groupOfNames		
	cn=emailperson, c=US	subschema		

Browse mode listing of a small directory.

- Technically, the DSE is the real top entry. Browse mode lists all direct children of the DSE. To view the DSE itself, click the up arrow from the first browse mode list.

To view and edit any entry, click the left arrow button for that entry in the list. To list the children of a found entry, click the down arrow button for that entry.

To view the parent of the current list, click the up arrow button (top left of the web page). To list all entries in the next level up in a branch, go up two levels then back down one. In other words, do this to list the aunts and uncles as well as the parent.

Permissions

Permissions mode is used to set directory and attribute permissions, which control LDAP client access to the directory and its data. To enter permissions mode, log in and choose Directory permissions or Attribute permissions from the login pop-up menu.

The permissions page for the directory and for each attribute is the same as the permissions page in the local interface. To make changes to permissions, enter them in the form and click OK. ClickMail next displays the main Attribute permissions page, where you can select a different attribute or switch to Edit or Find mode.

For more information about permissions settings, see the Permissions chapter.

Directory permissions

To change LDAP client permission settings for the database as a whole, choose Directory permissions on the login page. This directly opens the Directory permissions page.

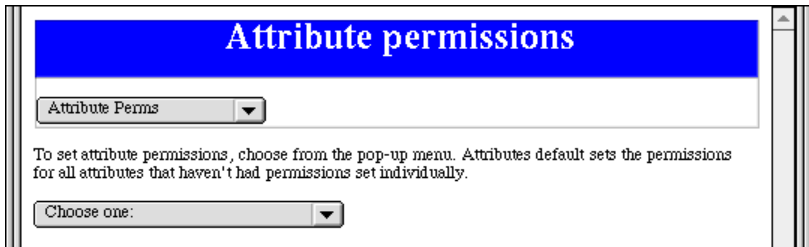
Attribute permissions

To change LDAP client access for a single attribute, choose Attribute permissions on the login page. This opens the Attribute permissions page.

The screenshot shows a web browser window with a blue header bar containing the text "Directory permissions". Below the header, the main content area is titled "LDAP Client Access" and includes a "Reset Form Values" button. The interface is divided into two sections under the heading "Read". The first section, "Everyone", has a checked checkbox and a sub-section with a checked checkbox labeled "whose IP is in the range:" followed by a text input field containing "192.168.1.1 - 192.168.1.255" and a range selection slider. The second section, "Logged in users", has a checked checkbox and a sub-section with an unchecked checkbox labeled "whose IP is in the range:" followed by an empty text input field and a range selection slider. At the bottom right of the form are "Cancel" and "OK" buttons.

Setting directory permissions via web administration.

Remote Web Administration



Attribute permissions page. The “Choose one” pop-up lists all attributes.

- Attribute permissions determine which attribute values can be “seen” by LDAP client programs. This allows you to keep certain attributes private from some or all client users.

From the Attribute permissions page, choose an attribute from the “Choose one” pop-up menu, which lists all attributes in the directory. This opens the permissions settings page for that attribute.

To set the default Attribute permissions, choose Attributes Default from the “Choose one” pop-up menu. Default permissions control the access to all attributes for which you have not set individual permissions..

In the permissions form, make any changes desired and click OK. When OK or Cancel is clicked, the Attribute permissions page with the pop-up menus reappears.

To enter Edit mode or Find mode, or view Directory permissions, choose from the mode pop-up menu at the top of the Attribute permissions page.

Customization

The “Web Administration” banner in the heading area may be replaced with a custom graphic, if desired. Use a GIF image, 400 pixels wide by 72 pixels high, resolution 72 DPI. Name the file “your_logo.gif” and replace the file by that name in the cmweb folder. To avoid web interface problems, do not replace other files in that folder.

Reference

- Cross references given in this section are hyperlinked if you are using the Acrobat or HTML versions. If this is ink on paper, find cross-reference terms in the Contents or Index.

Menus

File menu

Configure...: Configure settings for the datafile, including New and Open commands. See **Configure Directory Server Window**, below.

Import, Export: Submenus allow selection of two text formats, LDIF (which can be edited in a text editor) and tab-delimited, which can be manipulated in a spreadsheet or database. A third format, vCard, may be imported. The vCard format is an “electronic business card.” See **Export/Import**.

Logging...: Controls the display and storage of a log of events that occur in the operation of the directory, particularly client activity. See **Logging Window**, below..

Backup: Makes a backup copy of the directory, which consists of a datafile and “<datafile name> keys” file. Prepends “copy of “ before the names of the two files. Because of this, your datafile name must be 18 characters or less. See **Making a new directory**.

Reindex: Deletes all attribute indexes and recreates them. Normally done only when upgrading from an old datafile format (ClickMail reindexes automatically when needed). Reindexing takes several minutes or longer, depending on the size of your directory.

Compact Datafile: Removes unused space that accumulates in the datafile. This can be done at any time, but ClickMail prompts you at quit time if it thinks a compact is needed.

Reference

Resync from AppleShare: Synchronizes all mirror entries with the current items in AppleShare Users & Groups. For AppleShare mirror mode only.

Attributes Reference: Opens a simple reference window listing common attributes and their LDAP names.

Edit menu

Serial Number...: Enter the serial number to activate your purchased copy of ClickMail.

Preferences...: Choose preferences that stay with ClickMail, as opposed to settings associated with datafiles. See **ClickMail Preferences Window**, below.

Database menu

Permissions...: Sets overall access to the server by clients. See **Database permissions**.

Attributes...: Sets permissions for attributes in general and individually. See **Attribute permissions**.

Entries...: Opens Entry window for viewing and editing entries in the current directory. See **Working with entries**.

Windows menu

- A utility menu for finding, arranging, and hiding open windows.

Lists menu

This menu is used only with the Import and Export Tab-delimited windows. It helps you save and use lists of attributes/fields for importing and exporting external files.

Open Field List...: Opens a text file containing a list of fields and loads them into the attribute/field list in the Import/Export window. This replaces the current list.

Save Field List...: Saves the list of attributes/fields currently showing in the Import or Export window as a plain text file.

Standard Fields: Replaces the current attribute/field list with a list of attributes commonly used for person records. This option is good for exporting person entries that you plan to reimport later. The FileMaker Import/Data Utility template is preprogrammed with this list. This can be undone.

Current Database Attributes: Replaces the current attribute/field list with a list of all attributes that currently exist anywhere in the directory. This option is good for exporting person and non-person entries that you plan to reimport later. ClickMail remembers the last list you used in the Import or Export window. This can be undone.

Entries menu

To use this menu, open the Entries window (from the Database menu).

Find DSE: Finds the “DSA-Specific Entry,” an entry required by LDAP that is at the top of the directory tree.

Find Subschemas: Finds all subschema entries, which state what attributes belong in an entry type. ClickMail creates one subschema entry automatically.

Find Groups: Finds all group entries, which contain lists of dn’s referring to other entries.

Add Group...: Creates a group entry. Hold down option to create an administrators group for ClickMail remote (web) administration.

Reference

Paste DN: Pastes one or more distinguished names into an attribute. Select the attribute first.

Windows

- All major ClickMail windows contain a balloon help button (ⓘ). For more information about items in a window, click the button and point to the items. Click ⓘ again to turn off the balloons.

Attributes window

Lists all current attributes—for setting permissions. See **Attributes Window**, under Permissions and Security.

Attributes Reference window

This reference window lists common attributes by their plain English meanings and their LDAP names.

Choose an AppleShare Server window

When a new AppleShare mirror datafile is opened, this window allows you to choose from all AppleShare IP servers available on the network. This could also appear if the AppleShare server becomes unreachable.

Configure Directory Server window

This controls what datafile the server uses and global settings for this directory.

Stand-alone server or AppleShare Users & Groups

mirror: Choose whether this directory runs on its own or loads and updates itself from an AppleShare IP Registry. See **Mirroring AppleShare**.

Administrator Name: The user name of an AppleShare server administrator. Required to be able to access and mirror AppleShare.

Configure Directory Server

Stand-alone server
 ?

AppleShare Users & Groups mirror
 DCS Server

AppleShare Server

Administrator Name:

Password:

Email Domain:

Last, First Last First

Administrator's Email:

Max entries to return: Leave blank

Max seconds per search: for no limits.

Datafile

Geo: ...Testing:LDAP test dbs:Example database

Configure Directory Server window.

Administrator Password: Password of an AppleShare server administrator. Also required for access.

Email Domain: The domain name of email users on the AppleShare server. Used to create full email addresses from Alias names in AppleShare.

Last, First / Last First: To properly support users who have AppleShare user names in surname-before-given name format, check either or both boxes. Use “Last, First” if some of these AppleShare user names contain commas; use “Last First” if some do not.

Administrator's Email: Enter the email address of the administrator here. Will be used in a future version for remote notification.

Reference

Max entries to return: Limits the number of entries returned to an LDAP client when a search is too broad. 100 is a traditional value, although you may leave blank to allow any number of entries to be returned. Some client programs set their own limit, which is honored by ClickMail upon that program's request.

Max seconds to search: Similar to max entries, limits the amount of time used by a single search, including the time to return entries. Some client programs set their own time limit.

New... button: To create an empty, new datafile to store your directory in, click New.... The datafile is actually created when you click OK in the Configure Directory Server window.

Open... button: To open an existing datafile, click Open... and select the file. The new file is actually opened when you click OK in the Configure Directory Server window. Any previously open file is closed at that time.

Entry window (titled by name of datafile)—see **Working with entries**

Export/Import Tab-delimited window

This window, opened by the Export Tab-Delimited or Import Tab-delimited commands in the File menu, lets you select attributes to be exported/imported. By editing a plain text list, you can select attributes by name and set the field order for the tab-delimited file.

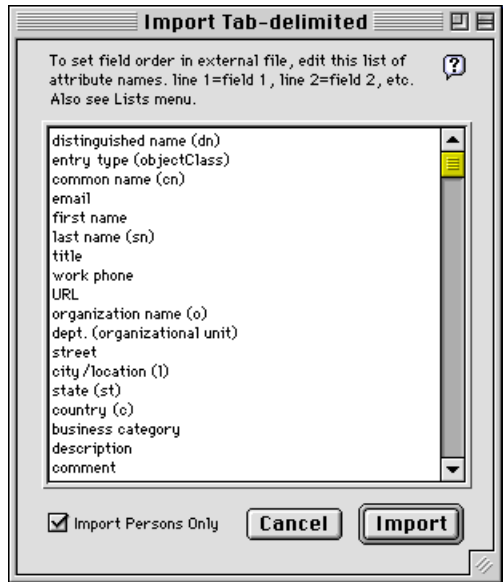
The scrolling text area contains a list of attribute names, one attribute per line. The order of the names sets the order that the fields in the tab-delimited file that will be created or imported. When importing, fields may be ignored by inserting blank lines in the list. To add, remove or reorder the names, use cut and paste.

Names in the list are in “plain English,” as shown in the Attributes Reference window. In cases where ClickMail does

not recognize the name, the actual name entered is used as the LDAP attribute name.

When opened, the list is set to what existed when the Export or Import button was last clicked.

Optionally, commands in the Lists menu may be used to open and save lists themselves as text files, or paste a standard list, or paste a list of all attributes currently in the directory.



Import Tab-delimited window with standard field list.

A checkbox, “Import Persons Only” or “Export Persons Only,” filters the entries being imported/exported according their entry type (objectClass). When checked, only entries with entry type person (or emailPerson, organizationalPerson, inetOrgPerson, residentialPerson) are imported/exported. When exporting, entries with other types are not exported. When importing, entries with other types are ignored (and logged).

- On import, an entry without an entry type is assumed to be an emailPerson.

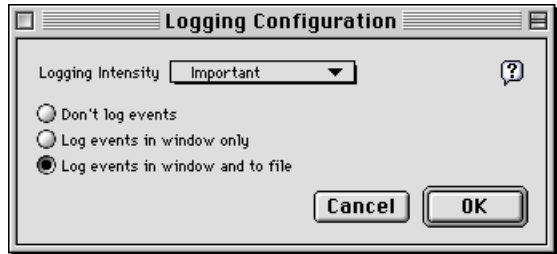
Logging window

This window controls how events such as client searches and file imports are logged.

The logging intensity pop-up menu controls the amount of detail logged. The choices are None (no logging), Critical (only

Reference

errors and a few essentials), Important (routine logging), and All (extensive detail for troubleshooting). The recommended intensity is Important.



Logging Configuration window.

Three logging modes are available: “Don’t log events,” “Log events in window only,” or “Log events in window and to file.” When this last option is enabled, a file named Log File, in the same folder ClickMail, receives all log entries shown in the window.

Permissions window - see **Permissions Window** in Permissions and security chapter

ClickMail Preferences window

Three preferences deal with compacting, the function which removes unused space from the datafile. Because this function can interrupt other applications on the server, the administrator can decide how and when this may be performed. ClickMail checks for excess unused space after a file import and when it quits.

Ask before compacting: When ClickMail finds significant unused space exists in the datafile, this preference causes it to put up a Cancel/OK dialog box before it compacts the datafile. The administrator thus has a chance to cancel, postponing the compact function until later. (Default: checked).

Auto-compact if user does not answer: When this Cancel/OK dialog is presented, and neither choice is clicked within 20 seconds, this preference determines whether ClickMail will compact or not. If it is critical that compacting never

interrupt other services without the administrator's consent, uncheck this preference. If it is more important that unused disk space be reduced, check this box. (Default: checked).

- When more than 200 entries are imported at once, ClickMail compacts the datafile every 200 entries. This compacting cannot be turned off.

Backup daily: When checked, ClickMail creates a closed backup copy of the current datafile, including the keys file. Set the hours and minutes to time that will interfere least with your users. A good time is shortly before your scheduled network backup.

Sync to AppleShare daily: When checked, ClickMail performs the Resync from AppleShare command each day at the time entered in the hours and minutes fields. This ensures that user changes made directly in AppleShare Users & Groups are propagated to ClickMail's mirror directory.

Compact daily: When checked, ClickMail performs the Compact Datafile command each day at the time entered in the hours and minutes fields. Although the datafile is compacted anyway when ClickMail



ClickMail Preferences window

Reference

deems it necessary, this preference ensures that the datafile stays as small as possible each day.

Administrator DN: When an entry is created or modified, ClickMail “timestamps” the entry with the date and time, and distinguished name of the person (such as a logged in web administrator) who made the change. When entries are imported or entered with the local ClickMail interface, the dn in this preference field is used for the timestamp (default: “cn=Directory Manager, c=US”). Please make sure this is a valid distinguished name.

Default LDAP Client Character Set: Most LDAP clients do **not** agree on a standard character set or encoding. ClickMail examines the input from clients and does its best to determine what encoding is being used. If your users use mostly one brand of client, you can specify ClickMail’s default “when in doubt” character set to match it. Here are the character sets currently in use, according to our tests of Macintosh clients.

UTF-8 Netscape 4.0 (but uses Macintosh in the DN to log in)

Latin-1 Outlook Express, Eudora Pro

Macintosh (Mac OS Roman): Mulberry(?), QuickMail Pro 1.5.

(Where Macintosh encoding was found, expect Latin-1 from any Windows versions of the same client.)

- The character set preference affects LDAP clients only, not web administration.

These preferences apply when ClickMail is configured in AppleShare Mirror mode only:

Web (CGI) Character Set: In order to view and edit special characters in entry data via ClickMail’s Web Administration, a character set must be used that is compatible with the web

server that our CGI calls are going through. Different web servers convert characters differently. Select the character set that works with server. UTF-8 is believed to work with AppleShare IP 5 and Personal Web Sharing. MacRoman is believed to work with AppleShare IP 6.x and Quid Pro Quo. Test your system to verify which character set works.

Add new entries to ASIP Users & Groups: When checked, all entries imported from text files will be created as AppleShare mirror entries and added to AppleShare Users & Groups as File-sharing enabled users. Also, new entries created in the Entry window will default to AppleShare mirror entry. When unchecked, all entries imported from text files will not be added to AppleShare, and new entries in the Entry window will default to non-AppleShare.

- When creating an entry in the Entry window, you may click the AppleShare user icon to determine whether the entry is mirrored with AppleShare or not. This may only be changed *before* the entry is first saved.

Copy passwords from ASIP Users & Groups: When checked, passwords are always copied from AppleShare users to ClickMail's mirror entries during synchronization. When not checked, passwords are only copied/updated if the password attribute is already present in a mirror entry. Leaving this off provides some additional security, but turning it on is useful for maintaining passwords outside AppleShare. Changing this setting takes effect on the next synchronization.

These preferences apply to Web Administration Access:

On (checkbox): When checked, Web Administration is allowed.

Web session timeout: This sets the time that ClickMail waits after the latest web administration command before automatically logging out the administrator. After the session ends, the administrator must log in again to do more work.

Troubleshooting

Error messages in client programs

- In case of client errors, check the ClickMail log for more information.

Can't open/find server, can't connect to server, server not responding

The client and ClickMail are not talking to each other. Can be caused by improper settings in the client, improper TCP/IP settings on the client or ClickMail Mac, or network failures.

To observe whether the client is reaching ClickMail, watch the ClickMail log window for activity when the client is used.

Make sure the IP address or host name entered for ClickMail in the client program's settings is correct.

Make sure that TCP/IP settings on the client computer and the ClickMail Mac are both correct, and that they are both connected to the network.

Verify that the client computer can “see” the ClickMail Mac—that the TCP/IP connection works. This is best done with a TCP/IP “Ping” utility run on the client. If there is a web or email server running on the ClickMail Mac, try accessing that service from the client.

Denied access, insufficient access

The client has been blocked by ClickMail's database permissions. Or, the client is attempting to log in with a password, and logged-in access is not enabled or the password is wrong.

In ClickMail's Database Permissions, check that the proper read access is enabled. If an IP range is in use, verify that the range includes the IP address of the client computer.

Check if client settings are configured to log in (authenticate). If so, make sure logged in access is enabled in Database Permissions. If an IP range is enabled for logged in users, make sure the IP range includes the IP address of the client computer. Make sure the password entered in the client's settings match the password attribute value in that user's entry. Make sure the user name or distinguished name entered in the client program is correct.

Base object outside naming context (included in LDAP error 32)

The client specified a base object (a distinguished name, usually in its preferences) that did not match the directory's naming context, or the base object did not have the same ending as the naming context. Change the client program setting. For basic lookups, leave the base object blank.

DN not found (included in LDAP error 32)

The client specified a base object (requested a specific entry) that is in the directory's naming context, but no entry exists with that distinguished name. The dn logged (and possibly displayed by the client) is the closest ancestor that **does** exist. So a smart client could try again with that dn.

Other problems in client programs

Entries that should be found are not found

Verify that the search text is entered properly according to the client's design (see Client Programs). Some clients require an asterisk before the entered term to find that term anywhere in an attribute value.

In Outlook, the advanced preference "simple search" may prevent you from getting the results you expect. See **Outlook Express**.

Try the same search using Find in the Entry window to see whether the correct entries are found. If not, make sure the

Troubleshooting

entries contain the data you expect. If the entries are correct but still not found, follow the step below to recreate the datafile.

If Find succeeds in the Entry window but the client find does not, either the client is not asking the right thing or ClickMail does not understand the request. To troubleshoot this, temporarily set your logging importance to “All” with disk logging on (see File menu). You may be able to get a sense of the request from this log. Or, send Gracion Software Tech Support part of the log for analysis.

If using Eudora Pro 4.0, upgrade to 4.0.1.

As a last resort, to rule out the possibility that the directory index is corrupted, **recreate the datafile**: Export all entries, create a new datafile, and reimport the entries. LDIF format works well for this.

An expected attribute does not appear in returned entries

Make sure that preferences for this attribute (individual or default) allow this client to read the attribute. See Attribute Permissions.

Make sure that the attribute you are requesting with the client is really the same as that contained in the directory (“street” is different from “postal address”). Netscape, Eudora, and Mulberry have options to display all the available attributes with their names. It may help to look at the Attributes Reference window in ClickMail (see File menu), which lists common attributes, and the plain-English names used by ClickMail.

Error messages in ClickMail

The application “ClickMail C.D.” could not be opened because “OTUtilityLib” (or similar) could not be found.

One of the extensions that ClickMail needs is not in the Extensions folder, or the Mac is running with extensions off. Move the missing extension to the Extensions folder and open ClickMail again. The name in the error message may differ from the filename of the missing extension. ClickMail always needs OpenTptInternetLib. For Systems 7.5–7.6.1, AppleScriptLib, InterfaceLib, MathLib, and ObjectSupportLib must also be present. These are all part of your normal Mac OS.

Errors in the Configure Directory Server window

If an error occurs while opening the datafile, the Configure Directory Server window is (re)opened with the error displayed in red at the top. This can be a disk error when trying to locate or find the file, or a corrupted datafile. Make sure there is a “keys” file in the same folder as the main datafile, by the same name plus a space and “keys”.

- A backup copy of an open file cannot be reopened—before making a backup copy, the file must be closed by ClickMail or copied using ClickMail’s Backup command.

Try using the Open button to find or reopen the file.

If the error is disk-related, try restoring a backup copy of the datafile or running a disk utility program.

TCP errors in the log

Check the TCP/IP settings for the ClickMail Mac. Check the connection to the network or Internet. Try quitting and restarting ClickMail.

Troubleshooting

Web Administration error messages

- Error messages on a white background are from ClickMail; error messages on a gray background are from the web server.

A CGI or internal server component could not complete the requested action (and similar web server errors).

ClickMail cannot be launched, the URL or application name is wrong, or there is a permissions problem. Check your installation and configuration of your web server and ClickMail.

Unexpected or internal error in ClickMail

Something happened that wasn't anticipated in ClickMail's programming. Please report the message and what led up to it. To recover, Click the Administer directory link and log in again.

Login Failed (white background)

You tried to login with wrong name, admin is not setup, or the password isn't right. Follow suggestions on error page.

Web Session Expired

Too much time has passed since your last command to the server (as set in its preferences). Log in again to continue.

Other Web Administration problems

Can't set Unicode UTF-8 encoding in Netscape (Western still checked after choosing UTF-8).

To recover, choose Mac OS Roman, then re-choose Unicode (UTF-8).

JavaScript error

Different versions of the ClickMail application and cmweb folder files (particularly cm_lib.js) may be conflicting. Reinstall the latest version of the application and cmweb folder to their correct locations (see **Installing Web Administration**).

Other issues

Performance (speed)

Logging: avoid the “All” logging intensity setting, which displays a large amount of information for troubleshooting use.

Foreground/background: Although it runs slightly faster when in the front (foreground), ClickMail runs nicely in the background when another application is in front. However, some applications, when in the foreground, slow down background applications (including ClickMail). Two applications to avoid running in the foreground over ClickMail are Vicom Internet Gateway and FileMaker Pro (regular version). Because FileMaker’s own hosting performance suffers in the background, running ClickMail on the same server as FileMaker is not recommended.

Giving ClickMail higher CPU priority: To prevent other applications running with ClickMail from taking so much CPU time that ClickMail slows down, use Peek-a-Boo (\$20, shareware). Peek-a-Boo can assign a lower priority to the offending application, or give ClickMail a higher priority. <http://www.clarkwoodsoftware.com/peekaboo/>

Importing problems

Check the log window for details on why individual entries were rejected or ignored. Make sure your imported data contains either a distinguished name, full name (common

Troubleshooting

name), or first and last name fields. See **Export/Import** for more information.

Tab-delimited files: Check that there are no return characters in your data, thus splitting one entry into two. When the Import People Only box is checked, entries are rejected if their entry type is not a person or subclass of person known to ClickMail (emailPerson, organizationalPerson, inetOrgPerson, residentialPerson). For example, the subschema entry in an import file would be rejected—but in most cases that's good.

Unexpected quits and crashes

ClickMail is stable running on Macs that meet its system requirements. If you are experiencing crashes, check for conflicting (usually non-Apple) extensions on your system, and consider doing a clean system reinstall. Check the Gracion Software web site to see if a newer version of ClickMail is available. Email support@gracion.com with a problem description and Apple System Profile report for a quick response.

Older versions of ClickMail could run out of memory after thousands of searches and crash. The current versions (1.1.1 and later) avoid this problem.

Links and thanks

Web sites

- Gracion Software—information and discussion of ClickMail Central Directory and related issues: <<http://www.gracion.com/server/>>
- Internet Mail Consortium—information on email and directory standards, vCards, and much more! <<http://www.imc.org/>>
- ITU Publications, where X.500 documents describing the basis of LDAP object and attribute types may be purchased. <<http://www.itu.ch/publications/index.html>>
- LDAP roadmap/FAQ <<http://www.kingsmountain.com/ldapRoadmap.shtml>>
- Netscape Directory Server FAQ <http://www.ipplanet.com/products/infrastructure/dir_security/dir_srvr/faq.html>
- Netscape's objectClasses for their LDAP server: <<http://home.netscape.com/eng/server/directory/3.0/agbeta2/objclass.htm>>

Colophon

This guide was outlined in ClarisWorks and produced with Adobe PageMaker 6.5. PageMaker's pagination, indexing, hyperlinking, and export to Acrobat and HTML features made it the best choice for producing this document in both paper and electronic forms.

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Links and thanks

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ClickMail Directory Server is dedicated to my wife **Cathy Carrier**, my best friend and the best partner in the Alpha Quadrant.

These people are the heroes of ClickMail Central Directory—the kind of people who push the envelope of high tech and good life!

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Craig Schamp

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
Mark Altenberg

Steffond Jones

Thanks to each of you for going above and beyond.

Special thanks to our very important **beta testers** who provided valuable feedback and great ideas.

Glossary

- Acrobat** Electronic document format by Adobe. One of the formats this guide is published in. Acrobat documents may be read with Acrobat Reader from Adobe Systems.
- AppleShare IP** Server software from Apple that includes a file, web, FTP, and mail servers. Contains a Users & Groups Registry of users that ClickMail can access when run in AppleShare mirror mode.
- AppleShare mirror mode** A directory run in this mode contains entries that represent users in AppleShare IP's Users & Groups Registry. The directory entries for these users are kept in sync with the Registry user information, such that AppleShare users can be looked up by client programs.
- attribute** Part of an entry. Consists of an attribute name (such as "work phone") and one or more attribute values (such as "+1 800 555 5555"). Attributes store all the information in an entry. There are certain attribute names recognized by client programs.
- attribute name** The label for one kind of data in an entry, such as the last name. ClickMail displays attribute names in plain English, while using the actual LDAP name to talk to LDAP clients. For some common names and LDAP equivalents, choose Attributes Reference from the File menu. ClickMail supports attribute names up to 127 characters.
- balloon help** Onscreen help that describes objects pointed to in a window. May be turned on in the Help menu or by clicking a  icon.
- child** An entry that is "under" a parent entry. For example, a parent entry that represents a department of a company may have child entries representing the employees in that department. Parent-child relationships are

Glossary

described by distinguished names. A child's distinguished name is created by adding something on the front of the parent's.

client	“User” software that uses the services of a separate “server” program to do something, such as look up email addresses. Although email programs are mentioned as clients throughout this guide, other LDAP-aware software can also act as a client to ClickMail.
common name	An attribute. The common name contains the full name of the entry (such as “Susan B. Anthony”). Often used as the first part of a distinguished name. Often contains several values: with and without the middle name, with a nickname as the first name, etc.
distinguished name (dn)	A special attribute that uniquely identifies an entry. Used as a label to “distinguish” it from any other entry. Made up of a list of attribute names and values. Example: “cn=John Smith, o=General Dynamics, c=US”
DNS	Domain Name Service/Server. Internet system that translates domain names (“gracion.com”) into numeric IP addresses (“123.45.67.8”). If a host name is used to refer to the ClickMail server, a DNS server must be reachable by the client to look up ClickMail's IP address.
DSA	Directory System Agent. The X.500 term for a program like ClickMail, and what the “D” in DSE stands for (an acronym within an acronym).
DSE	DSA-Specific Entry. This is the “top” entry in an LDAP server. It describes certain attributes of the directory. Its distinguished name is “” (an empty string). Its three required attributes are namingContexts (usually one, which you just entered), subschemaSubentry (a list of distinguished names of subschema entries), and

	objectClass (always “*”). The DSE cannot be deleted.
emailPerson	An entry type (objectClass) created for ClickMail. emailPerson entries contain the attributes that are commonly displayed by email client programs’ search functions.
entry	Container of attributes that describes a person or other entity. A directory consists of entries that can be searched and returned to client programs. (Database term: record).
entry type	An attribute that classifies the entry. Identifies this entry as a person, organization, country, device, specific kind of person, etc. (LDAP term: objectClass)
host name	A name representing a computer under TCP/IP. A host name either is a domain name or ends in one (examples: ldap.mydomain.com, mydomain.com). To connect to a directory server, a client program must know either the host name or the IP address of the server’s computer.
Latin-1	(a.k.a. ISO-8859-1) A character set encoding commonly used on web pages and Windows PCs. Some LDAP clients also use this encoding. Special characters (“é” “ü” “ñ”) in Latin-1 have different numeric representations than Mac OS Roman encoding. Latin-1 is a superset of US ASCII.
LDAP	Lightweight Directory Access Protocol. An Internet standard for accessing a directory (such as an address book) over TCP/IP. This sets the rules for how ClickMail talks with clients and how the data in the directory is labeled and organized.
LDAP-aware	Having the ability to look up information using the LDAP protocol (which ClickMail uses). Although the best known LDAP-aware clients are email programs, other kinds of programs can be written to be LDAP-aware.

Glossary

LDIF	LDAP Data Interchange Format. A text format for representing LDAP entries. ClickMail can import and export in this format. It is commonly used with large-system LDAP servers.
logging	The recording of events in ClickMail's operation that may be displayed in a window or written to a file.
IP address	a number that refers to a specific computer on the Internet. Usually seen as four numbers separated by periods, it's actually a 32-bit integer (which is why none of the four numbers ever exceeds 255). A host name usually represents one IP address, but an IP address can be referred to by several host names. ("IP," seen also in "TCP/IP," stands for Internet Protocol.)
Mac OS Roman	The character set encoding commonly used on Macintosh. A superset of US ASCII (<i>which see</i>). Compare Latin-1.
mail server	Program that stores and forwards Internet mail, according to Internet protocols such as IMAP, SMTP, or POP. Examples of mail servers on Macintosh are AppleShare IP Mail Server and Eudora Internet Mail Server (EIMS). Also the computer that a mail server program runs on.
mirror	Information maintained identically to that in another place, so that it can be accessed in another way. See AppleShare mirror mode.
naming context	The last part(s) of distinguished names common to the entire directory. In a parent-child tree, which theoretically extends outside the directory, the naming context could be thought of as the parent of the directory. The country attribute is commonly used as the naming context ("c=US").
objectClass	LDAP term for entry type.

permissions	Settings that restrict access to a folder, entry, or attribute to only authorized users.
port	A virtual “connector” in a computer under TCP/IP. A port is used to select a particular program running on a server. ClickMail uses the standard port for LDAP servers, 389.
preferences	Program settings that are remembered after the program quits. ClickMail’s preferences are stored in the System folder’s Preferences folder, as “ClickMail LDAP Preferences.”
RFC	Request for Comments. Documents that define Internet standards and protocols, among other things. See http://www.cis.ohio-state.edu/hypertext/information/rfc.html or any Internet index.
schema	Rules stating what attributes may or must be contained in an entry, according to an entry type (objectClass). A schema entry lists all the attributes belonging to a one entry type.
subschema	A more complicated way of saying schema. Actually, subschema suggests a schema that is subordinate to some other schema. In any case, the entry type for entries that describe schemas is <i>subschema</i> (see schema).
tab-delimited	A kind of text file where fields of data (attributes) are separated by tab characters and records (entries) are separated by return characters. Any spreadsheet or database can export in this format.
TCP/IP	(Transmission Control Protocol/Internet Protocol—also TCP) A standard for formatting and exchanging data between different computers over various networks (AppleTalk is another such standard). Every packet of data sent over the Internet is formatted according to TCP/IP. TCP/IP is the “lowest common denominator” format that carries all Internet protocols (such as LDAP, SMTP,

Glossary

- POP, and HTTP). Brought to you by the Department of Defense.
- Unicode A 16-bit character encoding system that can handle most of the world's writing systems, including Western, Asian, and Arabic. Equivalent to Universal Character Set (UCS) ISO-10646. See UTF-8.
- Users & Groups Registry A list of users on an AppleShare server with certain attributes, such as Name, Alias, and Comment. Some of these attributes are mirrored in entries in a ClickMail directory when run in AppleShare mirror mode.
- UTF-8 Unicode adapted into 8-bit bytes. The standard character set encoding for LDAPv3, and used by some LDAPv2 clients (notably Netscape). A key advantage of UTF-8 is that its regular US ASCII characters (A–Z, 0–9, etc.) are identical to US ASCII, Mac OS Roman, Latin-1, etc.).
- vCard The electronic business card format for the Internet. ClickMail can import vCards. Netscape Communicator has an option for automatically attaching your vCard to outgoing email. See <<http://www.imc.org/pdi>>.
- X.500 The international standard for telecommunications systems directories, (part of Open Systems Interconnection or OSI). The LDAP standards are derived from X.500, and refer back to X.500 documents to define attributes and entry types. Traditionally, LDAP servers were gateways to X.500 directory servers.

Index

glossary entries in italics

- ACGI 61
- acknowledgements! 96
- Acrobat 8, 77, 97
- add attribute 25, 26
- Add Group 64
- adding entries 26
- administrator, AppleShare
 - name 17, 80
 - password 17, 81
- Administrator DN preference 86
- administrator, web 63, 64
- Administrator's Email 10, 81
- aliases
 - entry 35
 - file 61
- AppleShare 20, 61
 - administrator 17, 80
 - groups 30
 - last, first user names 81
 - mirror 28, 64, 80, 97
 - passwords 17, 28, 64, 81, 87
 - synchronization
 - 18, 29, 59, 78, 85, 87
 - user 17
 - user access flags 30
 - user icon 87
- AppleShare IP 6, 97
- asipflags 30
- asipgroup 30
- ask before compacting 84
- attributes 5, 16, 97
 - adding 25
 - delete value 26
 - minimum 23
 - multiple values 51
 - names list 82
 - permissions 56
 - reference 78
 - standard 16
 - values 25
 - window 57
- auto-compact 84
- background, ClickMail in 93
- backup 18, 77, 85
- balloon help 25, 97
- CGI 61
- changes, global 53
- character sets
 - in text files 49
 - LDAP client 37, 86
 - web browser 67
- child entries 26, 34, 97
- choose an AppleShare server 80
- ClickMail
 - Basic 2
 - files 7
 - installing 7
 - launching 28
 - overview 5
 - passwords 46, 56–
 - 102, 61, 63–64, 67, 88
 - Preferences window 84
 - test drive 9
 - XL 2, 61
- client 11, 98
 - generic directions 37
- cmweb folder 61–63, 65
- colophon 95
- common fields 79
- common name 11, 20, 22, 98
- compact datafile 18, 77, 85
- compare (LDAP) 57, 59
- configure directory server
 - 16, 80
- crashes 94
- current attributes 79
- database permissions 56
 - default no access 56
- datafile 8, 28, 82, 90
- default attributes permissions
 - 56
- delete attribute value 26
- deleting entries 26
- directory 5
 - flat 32
 - parent-child 24

- tree 52
- tree-style 24
- Directory Manager 86
- distinguished name
 - 11, 21, 27, 30, 98
 - examples 30
- DNS 98
- Domain Specific Entry (DSE)
 - 19, 53, 74, 79, 98
- DSA 98

- Edit menu 78
- editing an entry 25
- email domain 81
- emailPerson 16, 21, 83, 99
- encryption 56, 61, 64
- Entries menu 79
- entry 5, 99
 - adding 26, 87
 - browsing 24
 - child 24, 34
 - deleting 26
 - editing 25
 - finding 24, 79
 - organization 33
 - organizational unit 34
 - other kinds 35
 - parent 24
 - reference info 24
 - type 19, 21, 30, 83, 99, 100
 - typing new 22
 - window 22
- Eudora Pro 12, 37
- everyone permissions 58
- export field list 82
- export persons only 83
- export/import tab-delimited
 - window 82
- exporting 49, 78
- extensions 6

- File menu 77
- FileMaker template 50
- files
 - formats 51
 - LDIF 49
 - new 54
 - tab-delimited 20–
 - 102, 49, 53, 101
 - vCard 21, 50
- finding entries 24
- flat directory 32

- global changes 53
- glossary 97
- groups 30, 79
 - administrator 63, 64

- host name 11, 99
- hyperlinks 77

- import field list 82
- import persons only 83
- Import/Data Utility 50, 54
- importing 20, 78
- IP address 11, 100
- IP address range 56, 58

- last, first user names 81
- Latin-1 99
- LDAP 5, 95, 99
- LDAP-aware 11, 99
- LDIF 16, 49, 90, 100
- Lists menu 20, 78
- log in 56, 65
- logged in users 58
- logging 17, 83, 93, 100
- Logging window 83

- Mac OS Roman 100
- mail server 2, 100
- max entries to return 82
- max seconds to search 82
- member attribute 65
- menus
 - Database 78
 - Edit 78
 - Entries 79
 - File 77
 - Lists 20, 78
 - Windows 78
- mirror 16, 100

Index

- mirroring AppleShare 28, 80
- Mulberry 39
- naming context 11, 17, 32, 100
- Netscape Communicator 13, 41
- Netscape Navigator 61, 65
- Network Browser 48
- new datafile 54, 82
- objectClass 19, 21, 83, 100
- open datafile 82
- open field list 79
- organization name 32
- organizational unit 34
- Outlook 14, 43
- parent-child 24
- password
 - user 57, 59
 - web server 65
- Paste DN 65, 80
- performance 93
- permissions 56, 74, 101
 - attribute 56, 75
 - database 17, 56, 75
 - default attribute 56, 76
 - everyone 58
 - IP address range 58
 - logged in users 58
 - read access 58
 - web 63
- permissions window 57
- port 101
- Preferences
 - web admin 63
- preferences 8, 18, 84, 101
 - ask before compacting 84
 - auto-compact 84
 - window 84
- QuickMail Pro 46
- rdn 27
- read access 58
- reindex 77
- relative distinguished name 27
- Remote Web Administration
 - Requirements: 61
 - RFC 101
- save field list 79
- schema 19, 101
- security 56
- Sherlock 48
- speed 93
- SSL 56, 61, 64
- standard fields 79
- subschema 19, 79, 101
- System Requirements 6
- tab-delimited 16, 49, 94, 101
- TCP/IP 56, 88, 91, 99, 101
- timeout, web admin 63, 87
- tree-style 24
- troubleshooting 88
 - ClickMail 91
 - client 88, 89
 - connection 88
 - datafile 91
 - denied access 88
 - importing problems 93
 - TCP errors 91
 - web administration 92–102
- Unicode, UTF-8 102
- user strategy 35
- userPassword 46, 57, 59
- Users & Groups Registry
 - 16, 28, 102
- vCard 21, 50, 102
- web admin modes 67
 - attribute permissions 75
 - browse 73
 - directory permissions 75
 - Edit 69
 - find 71
 - list 73
 - login 65
 - permissions 74
- web admin pages

- add/add child buttons 71
- AppleShare mirror mode 71
- attribute add/remove 70
- attribute new 70
- attribute pop-up menu 70
- auto-saved 70
- cancel button 70
- changes not saved 71
- custom graphic 76
- delete entry button 70
- distinguished name 70
- down arrow 74
- how it works 70
- mode pop-up menu
 - 70, 71, 73
- navigation controls 70
- new entry 71
- reset button 70
- submit button 69, 71
- up arrow 74
- view parent 74
- Web Administration 61–102, 87
- web server 61–102, 65
- web sites 95
- windows
 - Attributes 57
 - Choose an AppleShare server
 - 80
 - ClickMail Preferences 84
 - Configure Directory Server
 - 16, 80
 - Entry 22
 - Export/Import tab-delimited
 - 82
 - Logging 83
 - permissions 57
- Windows menu 78
- write access (LDAP) 36, 59

- X.500 34, 102