Last_name: Rosener
First_name: Bill
Middle_name: J.
Affiliation: University of Tennessee
Office_address: Dept. of Computer Science; 107 Ayres Hall
City_state_zip: Knoxville, TN 37996-1301
Country: U.S.A.
Office_phone: (615) 974-3647
Research: Highly-interactive, direct manipulation, $< return >$
                3D graphical interfaces.
Home_address: 1403 White Ave; Knoxville TN, 37916
E_mail_address: rosener@cs.utk.edu
Other: graduate student

Note: That the optional fields "Fax", "Home_phone", and "Other_name" were not given, so people querying Bill Rosener will not find this information.

6. An example of how Mike Foobar would remove his entry from the white-pages.

   mail na.remove-wp@na-net.ornl.gov
   Subject: anything

   Last_name: foobar
   First_name: mike

7. An example of how Mike Fox would change his E-mail address and Fax number while also clearing his Home Phone number in the white-pages.

   mail na.change-wp@na-net.ornl.gov
   Subject: anything

   Last_name: fox
   First_name: mike
   E_mail_address: fox@new.address
   Home_phone:
   Fax: (764) 285-4239

References

[1] Eric Allman. *Sendmail Installation and Operation Guide* Version 5.11. For Sendmail Version 5.61. Britton-Lee, Inc. July 1983.

[2] Eric Allman. *Sendmail - An Internetwork Mail Router* Britton-Lee, Inc. July 1983.

[3] Jack Dongarra and Eric Grosse. *Distribution of Mathematical Software Via Electronic Mail* Communications of the ACM, Volume 30 (Number 5), May 1987.

[4] Mark Kent. *ETH Eidgenossische Technische Hochschle Zurich.* The Numerical Analysis Net. January 1988.

last-name: rosener
first-name: bill
————————————————

A message similar to the following will then be returned.

Last Name:	Rosener	
First Name:	Bill	
Middle Name:	J.	
Affiliation:	University of Tennessee	
Office Address:	Dept. of Computer Science; 107 Ayres Hall	
City State Zip:	Knoxville, TN 37996-1301	
Country:	U.S.A.	
Office Phone:	(615) 974-3647	
Research:	Highly-interactive, direct manipulation, 3D graphical interfaces.	$< MULTIPLE-LINES >$
Home Address:	1403 White Ave; Knoxville TN, 37916	
Fax:	615-974-8296	
E-mail Address:	rosener@cs.utk.edu	
Other:	graduate student	
Correct as of:	Jun 1991	

2. For example, to find out more information on all people whose last name is "smith".

   mail to: na.whois@na-net.ornl.gov
   Subject: "blank"

   smith

3. For example, to find out more information on all people who are interested in "parallel". This does a string comparison on all fields other than the name fields searching for the pattern "parallel".

   mail to: na.whois@na-net.ornl.gov
   Subject: "blank"

   Keyword: parallel

4. For example, to find out more information on all people who live in "Knoxville". This does a string comparison on all fields other than the name fields searching for the pattern "Knoxville".

   mail to: na.whois@na-net.ornl.gov
   Subject: "blank"

   Keyword: Knoxville

5. An example of how Bill Rosener would join the white-pages.

   mail na.join-wp@na-net.ornl.gov
   Subject: anything

5 Appendix B

Below are some real examples to give you an idea of how the white-pages works.

1. For example, to find out more about Bill Rosener. The software has been written to understand many different forms. The following are some of the acceptable forms.

   ————————————————

   mail to: na.whois@na-net.ornl.gov
   Subject: "blank"

   Bill Rosener
   ————————————————

   OR

   ————————————————

   mail to: na.whois@na-net.ornl.gov
   Subject: "blank"

   Rosener Bill
   ————————————————

   OR

   ————————————————

   mail to: na.whois@na-net.ornl.gov
   Subject: "blank"

   whois Rosener Bill
   ————————————————

   OR

   ————————————————

   mail to: na.whois@na-net.ornl.gov
   Subject: bill rosener

   NULL body
   ————————————————

   OR

   ————————————————

   mail to: na.whois@na-net.ornl.gov
   Subject: whois bill rosener

   NULL body
   ————————————————

   OR

   ————————————————

   mail to: na.whois@na-net.ornl.gov
   Subject: "blank"

.
.
.
———————————————————————

4. An example of how Gene Golub would join the NA-NET.

   mail na.join@na-net.ornl.gov
   Subject: anything

   Lastname: golub
   Firstname: gene
   E-mail: golub@patience.stanford.edu

5. An example of how Mike Foobar would remove his membership in the NA-NET.

   mail na.remove@na-net.ornl.gov
   Subject: anything

   Lastname: foobar
   Firstname: mike
   key: foobar

6. An example of how Mike Fox would change his e-mail address.

   mail na.change@na-net.ornl.gov
   Subject: anything

   Lastname: fox
   Firstname: mike
   New-address: mfox@new.address
   key: mfox

3.8 How to Obtain the NA-NET Software

The NA-NET software can be obtained through netlib by sending the message,

send na-net from misc

to netlib@ornl.gov

Or send postal mail to:

Jack Dongarra
University of Tennessee
Dept. of Computer Science
107 Ayres Hall
Knoxville, TN 37996-1301
dongarra@cs.utk.edu
(615) 974-8295

4 Appendix A

Below are some real examples to give you an idea of how the /small NA-NET works.

1. For example, to mail to Gene Golub.

   mail to: na.golub@na-net.ornl.gov

2. Mail sent to a nonexistent NA-NET name. For example,

   mail sent to: na.abcde@na-net.ornl.gov

   will result in the following message being returned to you.

   ———————————————————

   NA-NET key not found. Message returned.

   .
   .
   .

   ———————————————————

3. Mail sent to a non-unique NA-NET name. For example,

   mail sent to: na.fox@na-net.ornl.gov

   will result in the following message being returned to you.

   ———————————————————

   Ambiguous key: try one of the following

   fox, david = na.dfox
   fox, phyl = na.pfox
   fox, x = na.cfox

3.7 NA-NET White-pages

Below is a short description of the format of the white-pages database file. The entries are stored in the file "whitepages.database." This file is a plain ASCII file. However, because users can include spaces in all fields (except first_name, last_name, and middle_name), a special character must be used to denote the end of a field. The special character ^M has been choosen to denote the end of a field. The character ^A is used to denote the end of line when multiple lines are used for one field. Shown below is a line from the file "whitepages.database".

```
Dongarra^MJack^MJ.^M^MUniversity of Tennessee and Oak Ridge National Laboratory^MDept.
of Computer Science; 107 Ayres Hall^MKnoxville, TN  37996-1301^MUSA^M(615) 974-8295^M
Numerical Linear Algebra^AParallel Processing^ASoftware Tools^A^M107 Claymore Ln; Oak
Ridge, TN 37830^M(615) 481-8295^M(615) 974-8296^Mdongarra@cs.utk.edu^MFeel free to call
me from 8 am until 11 pm.^MJun 1991^M
```

The research field of Jack Dongarra is the only multiple-line field. This example also illustrates how a blank field is represented. In this example the field "Other-name:" has not been specified. This is stored in the database file as two ^M's (See the first line of the sample entry.) The program "print-wp.c" has been written to allow the NA-NET administrators to examine this somewhat encrypted file. Shown below is the output from this program using the example above.

Last Name:	Dongarra	
First Name:	Jack	
Middle Name:	J.	
Affiliation:	University of Tennessee and Oak Ridge National Laboratory	
Office Address:	Dept. of Computer Science; 107 Ayres Hall	
City State Zip:	Knoxville, TN 37996-1301	
Country:	USA	
Office Phone:	(615) 974-8295	
Research:	Numerical Linear Algebra	*< MULTIPLE – LINES >*
	Parallel Processing	
	Software Tools	
Home address:	107 Claymore Ln; Oak Ridge, TN 37830	
Home phone:	(615) 481-8295	
Fax:	(615) 974-8296	
E-mail address:	dongarra@cs.utk.edu	
Other:	Feel free to call me from 8 am until 11 pm.	
Correct as of:	Jun 1991	

The following two commands can be helpful when examing the white-pages database file.

print-wp | more   *print-wp > filename*

3.6 Removal of Bad Addresses

When sending the digest to the combined list, some of the message sent may bounce. The following is a partial list of the reasons that cause messages to bounce.

- The user submits an invalid address when using the auto-join or auto-address change facilities of the NA-NET.
- A host is down.
- A user's account has expired. The users account was maybe either temporary or they moved to a new address.
- Problems in remote mailing lists.

The administrators of the NA-NET have decided upon the following policy concerning bad addresses. If an address fails 3 weeks in a row, that address will be removed from the the master database file (" nanet_names.master"). To remove bad addresses, the following steps are taken approximately every month.

1. *parse_bad_mail file_name1*
   mv Bad.Addresses Bad1

   parse_bad_mail file_name2
   mv Bad.Addresses Bad2

   parse_bad_mail file_name3
   mv Bad.Addresses Bad3
2. *sort Bad1 > Bad11*
   sort Bad2 > Bad22
   sort Bad3 > Bad33
3. *comm -12 Bad11 Bad22 > Bad12*
   comm -12 Bad12 Bad33 > Allbad
4. Remove the addresses in "Allbad" from the file "nanet_names.master"

First, the program "parse_bad_mail" goes through a file of returned mail and extracts the bad addresses from the "Apparently-To:" field. The addresses are then sorted. Next the command "comm" is invoked. This selects those lines that are common to the two sorted files. Finally, the the bad addresses are removed.

3.5 Sending the Digest

Approximately once a week the Editor of the NA-NET News Digest will go over the messages that have queued up, pick out the ones that are thought to be of general interest to the numerical analysis and mathematical software community, combine them in a News Digest format, and mail the Digest to everyone on the mailing list. The digest is sent from the account “nacomb” unlike the rest of the NA-NET which resides in the account “nanet.” One reason of this approach is that the mail to this account does not need to be carefully read since it only contains bounced digest mail. Whereas if the digest was sent from a personal account then that person would have to carefully sort through their mail removing all bounced digest messages. A second reason for of a separate account is that it ensures that the combined list is not being updated while the digest is being sent. For whenever a user joins the NA-NET or changes their e-mail address this file is updated. Thus as shown below, the first step in sending the digest is to copy an updated version of the combined list to the “nacomb” account.

1. Execute the following command.

   cp nanet/nanet_names.comb nacomb/nanet_names.comb

   This ensures that the list is up-todate.

2. Store last weeks' returned mail so that bad addresses can be removed.

   mv /usr/spool/mail/nacomb filename.txt

3. Place the message you wish to send in the file “message.txt”

4. Execute the program send_digest.

   > *send_digest*

This program sends out approximately one mail message every 3 seconds. Currently, there are about 2000 members in the NA-NET. So it will take about 2 hours to complete.

It is probably a good idea to check that the last mail message sent is also the last address in the file nanet_names.comb.

```
    strcpy(from_address, "nanet");
    strcpy(send_to, "na-usage");
    execl("/usr/lib/sendmail", "sendmail", "-f", "nanet", "na-usage", NULL);
  }
```

Below is a brief description of the arguments to the system call *execl.*

"/usr/lib/sendmail"	- is the pathname for the message transfer agent.
"sendmail"	- the name of the program
"-f"	- sets the name of the "from" person (i.e. the sender of the mail).
"nanet"	- who the mail is from
"na-usage"	- recipient of mail
NULL	- a null pointer is used to terminate the variable number of arguments.

As shown above the recipient of the usage report is "na-usage". This address is included in the alias file.

The file "/usr/lib/aliases" contains the following

————————————————————————————

na-usage: :include:/usr/cfs1/nanet/CRON/usage.addresses
owner-na-usage: nanet

————————————————————————————

In *sendmail* this technique is called inclusion. Any mail send to na-usage will read the file "usage.addresse" and send the mail to all users listed in this file. Inclusion allows a mailing list to be changed without the interaction of a system administrator, because on most systems the alias file is protected. For more information on this technique see [1]. (section 3.3.3)

The file "/usr/cfs1/nanet/CRON/usage.addresses" currently contains the following addresses:

——————————————————

dongarra@cs.utk.edu
golub@Cholesky.Stanford.EDU
moler@surfer.epm.ornl.gov
rosener@cs.utk.edu

——————————————————

In addition to sending the usage report, the program daily_mail also copies the log files and debug files as shown below. These files can be very helpful while trying to figure out problems.

system ("cp ~nanet/log5 ~nanet/log6");
system ("cp ~nanet/log4 ~nanet/log5");
system ("cp ~nanet/log3 ~nanet/log4");
system ("cp ~nanet/log2 ~nanet/log3");
system ("cp ~nanet/log1 ~nanet/log2");
system ("cp ~nanet/log.txt ~nanet/log1");

3.4 Daily Usage Report

To let the NANET administrators know which facilities are being used the most, a Usage Report is sent out every night. This brief report indicates how many mail messages were sent to each feature and how many mail message are currently in the collect file. Mail to na.digest is stored in the collect file. Below is a typical NA-NET usage report.

```
----------------------------------------------------------------
NA-NET usage

91 mail message(s) were sent to the NA-NET on: Jun 13

Analysis of mail messages sent today:

   To na.sendlist   = 2
   To na.help       = 7
   To na.join       = 4
   To na.remove     = 0
   To na.change     = 1
   To na.digest     = 2
   To individuals   = 61

   To na.whois      = 12
   To na.join-wp    = 1
   To na.change-wp  = 1
   To na.remove-wp  = 0

There are currently 30 mail messages in the collect file.
-------------------------------------------------------------------
```

To send this nightly mail message, the following line has been added to the cron file. This file requires superuser privileges to modify.

59 23 * * * /usr/cfs1/nanet/CRON/daily_mail

This line indicates the program *daily_mail* should be executed at 1 minute before midnight every day. This program analyzes the current day's log file (i.e. "log.txt") and constructs a usage report in the file "usage.txt". As shown below the file "usage.txt" is then opened as standard input and the system command *execl* is invoked.

```
  mail_usage_reports ( )
    {
      char from_address [MAXLENGTH];
      char send_to [MAXLENGTH];

      fp_usage = freopen("/usr/cfs1/nanet/CRON/usage.txt", "r", stdin);
```

3.3 Log and Debug Files

To help with record keeping the file "log.txt" records all requests made on any given day. At midnight this file is appended to the yearly log file. Because of the large size of the yearly log file, we also maintain log files for the past 7 days for convenience. Shown below is a portion of a log file.

1991	6	19	14:11	From dongarra@cs.utk.edu Wed Jun 19 14:10:39 1991
				To: na.help@surfer.EPM.ORNL.GOV
1991	6	19	14:12	From dongarra@cs.utk.edu Wed Jun 19 14:10:58 1991
				To: na.brosener@surfer.EPM.ORNL.GOV
1991	6	19	14:12	From dongarra@cs.utk.edu Wed Jun 19 14:11:08 1991
				To: na.join-wp@surfer.EPM.ORNL.GOV

To help with the development of the NA-NET and also to help solve user problems, we also maintain one weeks worth of debug files. For example members sometimes have trouble when changing their e-mail addresses. To change ones e-mail address, a user must send a message to the NA-NET containing their first name, last name, and new e-mail address. Occassionaly, they use a different form of their first name. (For example, "William" instead of "Bill") Now the administrators of the NA-NET can examine the debug file when answering questions, and can determine that the user specified the wrong first name.

3. **Send mail to all addresses in the file "addresses.txt" -** This third condition arises when: changing an e-mail address, changing a field in the white-pages, or removing a member from either the NA-NET or white-pages. For example if someone changed their e-mail address the following 3 locations would all receive a confirmation - assuming the 3 addresses were different.

   - The address requesting the change
   - The new address
   - The old address

Shown below is a message send to "na.brosener@na-net.ornl.gov" from "rosener@cs.utk.edu" This example illustrates how messages appear to have come from the sender, even though it was forwarded though the NA-NET.

```
From rosener@UTKUX1.utk.edu Wed Jun 19 17:42:26 1991
Return-Path: <rosener@UTKUX1.utk.edu>
Received: from surfer.EPM.ORNL.GOV by CS.UTK.EDU with SMTP (5.61++/2.5.1s-UTK)
        id AA01526; Wed, 19 Jun 91 17:42:22 -0400
Received: by surfer.EPM.ORNL.GOV (5.61/1.34)
        id AA14525; Wed, 19 Jun 91 16:06:09 -0400
Received: from UTKUX1.UTK.EDU by surfer.EPM.ORNL.GOV (5.61/1.34)
        id AA14515; Wed, 19 Jun 91 16:05:08 -0400
Received: by UTKUX1.utk.edu (5.57/Ultrix2.4-C)
        id AA28369; Wed, 19 Jun 91 16:04:34 EDT
Date: Wed, 19 Jun 91 16:04:34 EDT
From: rosener@utkux1.utk.edu (Bill Rosener)
Message-Id: <9106192004.AA28369@UTKUX1.utk.edu>
To: na.brosener@surfer.EPM.ORNL.GOV
Subject: test
Status: R

end test
```

nanet_names.master

```
        ...
smith, david (na.dsmith) smith@cs.utk.edu
smith, john (na.jsmith) smith@math.utk.edu
        ...
```

nanet_names.na

```
        ...
dsmith smith@cs.utk.edu
        ...
jsmith smith@math.utk.edu
        ...
```

nanet_names.last

```
        ...
smith, david = na.dsmith
smith, john = na.jsmith
        ...
```

nanet_names.comb

```
        ...
smith@cs.utk.edu
smith@math.utk.edu
        ...
```

Figure 2: Format of NA-NET files

Upon a careful examination of the NA-NET source code you will find that the variable WHO-TO determines where the message will actually be sent to.

The 3 possible options are:

1. **Send a message back to the user -** This condition arises in the following situations:
   - Anytime mail is sent to - "na.help@na-net.ornl.gov"
   - Anytime mail is sent to - "na.sendlist@na-net.ornl.gov"
   - Anytime mail is sent to - "na.digest@na-net.ornl.gov"
   - Anytime mail is sent to - "na.whois@na-net.ornl.gov"
   - Mail sent to a nonexistent NA-NET name will result in an error message being returned.
   - Mail sent to a non-unique NA-NET name also will result in an error message being returned to the sender.
2. **Forward the message -** All incoming mail to valid individuals is simply forwarded.

This message informs the sender that there are two members with the lastname *smith* and also gives their NA-NET address.

The following diagram shows the NANET file hierarchy.

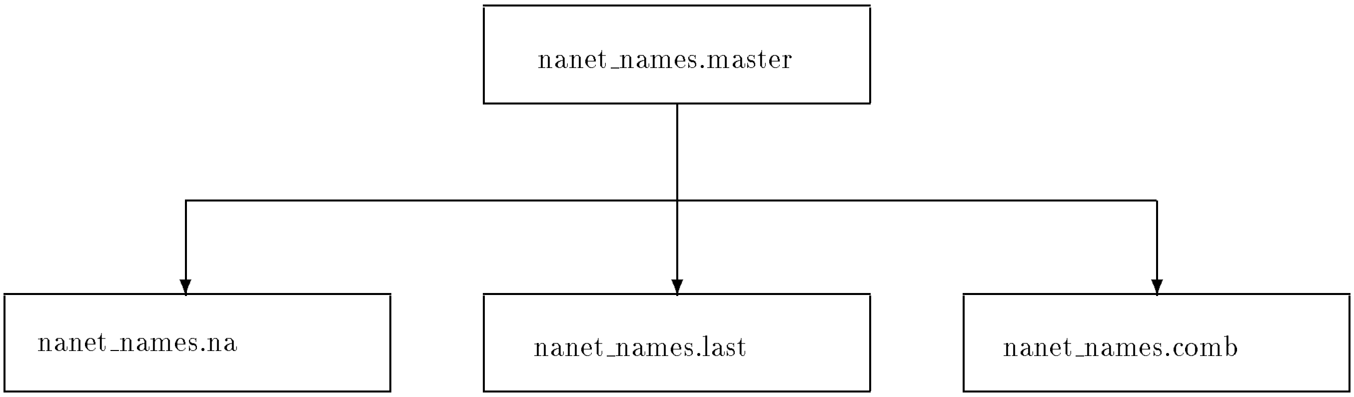

Figure 1: NA-NET files

3.2 Processing the Incoming Mail

The next step is to process the incoming mail. To do this we added the following line to a cron file

0,5,10,15,20,25,30,35,40,45,50,55 * * * * /usr/cfs1/nanet/nanet_daemon

The crontab file consists of lines of six fields each. The first 5 fields specify the time (minute, hour, day-of-the-month, month, year, and day of the week). The 6th field specifies a command that should be executed. In our case the command is actually an executable file called "nanet_daemon" The asterisk indicates all legal values. So every 5 minutes the file nanet_daemon is executed.

The program "nanet_daemon" takes the first message from "incoming.mail" and temporarily stores it into "next_mail.message". After it has been stored, the following call is made.

system("/usr/cfs1/nanet/send_mail")

This program first examines the recipient (argv[1]) to see if it is one of the following:

sendlist
help
join
remove
change
digest
whois
join-wp
change-wp
remove-wp

If the recipient is not one of the above, then it is assumed that the message is intended for an individual. Figure 2 show the format of the NA-NET files. When a message is destined for an individual, the file "nanet_names.na" is first searched. This file is sorted by the users "na" key. The "na" key is usually the users last name. An exception occurs when more than one person has the same last name. In this case the users "na" key is formed by prepending their first initial to their last name. In the example in figure 2, there are two Smith's (David and John) As shown David's key is dsmith whereas John's key is jsmith. So if mail was sent to "na.dsmith@na-net.ornl.gov" the mail would be forwarded to "smith@cs.utk.edu" Likewise, if mail was sent to "na.jsmith@na-net.ornl.gov" the mail would be forwarded to "smith@math.utk.edu"

If the recipient is not found in the "nanet_names.na" file then a search is performed on the "nanet_names.last" file. For example if someone sends mail to "na.smith@na-net.ornl.gov" The following message would be returned.

————————————————

Ambiguous key: try one of the following.

smith, david = na.dsmith
smith, john = na.jsmith
————————————————

As shown below the namailer reads from standard input and temporarily appends the incoming message (header and body) to the file "incoming.mail".

```
fp_incoming = fopen ("/usr/cfs1/nanet/incoming.mail", "a");
fprintf(fp_incoming, "**** New Message ****\n");
fprintf(fp_incoming, "argc %d\n", argc);
fprintf(fp_incoming, "argv_1 %s\n", argv[1]);
while (fgets(line, sizeof line, stdin) != NULL)
  {
    fprintf(fp_incoming, "%s", line);
  }
```

The recipient of the message cannot always be determined from the "To:" field of the header, because the message might be addressed to more than one person. Therefore the recipient of the message is passed as the final argument to the mailer and is stored as well as the message itself. The sender of the message however is read from the "From:" field of the header.

file ("sendmail.cf").

1. Rna.$+ $#namailer $:$1
2. Mnamailer, P=/usr/cfs1/nanet/namailer, F=lsDFMe, A=namailer $u

The first line is a rewriting rule. As the incoming address is being parsed, *sendmail* scans through a set of rewriting rules looking for a match on the left hand side (LHS) of the rule. In this case it catches all mail beginning with "na." which is followed by one or more tokens. The symbol "$+" indicates - "match one or more tokens." The symbol "$#" on the right hand side (RHS) of this rule causes evaluation of the ruleset to terminate immediately. It signals to *sendmail* that the address has been completely resolved.

The second line above defines the "namailer" and the arguments to pass to it. Below are listed the arguments and a short explanation.

P=/usr/cfs1/nanet/namailer	The path name of the mailer.
F=lsDFME	Flags l - this mailer is local s - strip quote characters off D - This mailer wants a "Date:" header line F - This mailer wants a "From:" header line M - This mailer wants a "Messge-Id:" header line E - Escape lines beginning with "From" in the message with a '>' sign.
A=namailer	The argument vector to pass to this mailer. In this case it is the word "namailer"
$u	The words containing the name of the receiving user.

For more information on the *sendmail* configuration file see [1, 2].

3). Removing your White-pages entry - To remove your entry from the NA-NET white-pages database send mail to "na.remove-wp@na-net.ornl.gov". In the message body specify the following two fields.

Last_name:
First_name:

The values can be specified in any order. Again the subject line of your message is ignored. For security purposes, a confirmation message will be sent to both the address requesting the removal and also to the address listed in the white-pages database. See Appendix B for an example of removing your entry.

4). Changing fields - To change the value of a field or to add a new field, send mail to "na.change-wp@na-net.ornl.gov". In the message body specify the following two fields plus the fields to be added or changed.

Last_name:
First_name:

The values can be specified in any order. Again the subject line of your message is ignored. You cannot change your name. If you wish to do so, first remove your entry and then rejoin with the new name. If you wish to clear the value of a field, simply include the field with no value. A message will be sent back to you confirming the operation was successful. See Appendix B for an example on how to change or add a field.

3 THE UNDERLYING SOFTWARE

The following section discusses the NA-NET software from an implementation perspective.

The NA-NET system was developed to run on a UNIX system. In order to install this software superuser privileges were required to modify the following three files. The pathnames of these files may vary from one version of UNIX to another.

/usr/lib/aliases
/etc/sendmail.cf
/usr/lib/crontab

We begin, in Sections 3.1 and 3.2 with a discussion of how the incoming mail is caught and processed. Sections 3.3 and 3.4 describe the log files and the daily usage report. Together these two features keep the NA-NET administrators informed daily on which facilities are being used the most. Next in Sections 3.5 and 3.6 we look at how the weekly digest is sent and the how bad addresses are removed. Section 3.7 takes a closer look at the format of the white-pages database file. Finally, in Section 3.8 we describe how you can obtain your own copy of the NA-NET software.

3.1 Catching and Storing Incoming Mail

The first step in writing the NA-NET was getting all mail to be delivered to one location for processing. This was accomplished by adding the following two lines to the *sendmail* configuration

2.2 Features of the NA-NET White-pages

The "white-pages" is a directory service that has been recently added to the NANET. It allows users of the NA-NET to find out more information about other members. This facility is available to everyone. However, we would especially encourage members of the NANET to join. Like any directory service, it will only work if everybody takes a few moments to join, and then as necessary updates their entry. Below is a short description of the "white-pages" and how to use it.

1). Querying the White-pages database - To find out information about a person send mail to "na.whois@na-net.ornl.gov". In the message body or on the subject line specify their first name and last name, or just their last name. The order of first name and last name does not matter. See Appendix B for examples.

2). Joining the White-pages - To join the "white-pages" send mail to "na.join-wp@na-net.ornl.gov". In the message body specify the two mandatory fields and as many of the optional fields as you want.

Mandatory
Last_name:
First_name:

Optional Fields
Middle_name:
Other_name:
Affiliation:
Office_address:
City_state_zip:
Country:
Office_phone:
Research:
Home_address:
Home_phone:
Fax:
E_mail_address:
Other:

The fields can be specified in any order. The subject line of your message is ignored. All fields are entered into the database as characters, so spaces can be used for readability. All fields (except first_name, last_name, and middle_name) can be multiple lines. A multiple-line field ends when the the next keyword (e.g. "Country:") is found. Place a $< return >$ character at the end of each line. In the rare exception that your first-name and last-name combination is not unique, send mail to "nanet@na-net.ornl.gov". We will manually insert your name into the white-pages despite the duplication. This should not cause any problems for people querying the white-pages database because it is set up to return information on ALL people with a given last name, first name, or combination. A message will be sent back to you confirming the operation was successful. See Appendix B for an example of joining the white-pages.

The values can be specified in any order. Again the subject line of your message is ignored. A message will be sent to both the old-address as well as the new-address informing you that the change has taken place. See Appendix A for an example on how to change your e-mail address.

Help - Questions and comments about the NA-NET should be addressed to:

nanet@na-net.ornl.gov

Every effort will be made to have a person read all mail messages to this account.

Mail sent to:

na.help@na-net.ornl.gov

will return a message describing both the NA-NET and the White-pages.

Current list of all members - Mail sent to the following address will result in a mail message being sent back to you containing all members of the NA-NET.

na.sendlist@na-net.ornl.gov

2 USER'S PERSPECTIVE

2.1 Features of the NA-NET

Individual (unicast) messages - This is the most frequently used feature. Each member has a unique NA-NET name. This NA-NET name is usually the same as the members last name. However, if there is more than one member with the same last name then the first initial is usually prepended to their last name to form their NA-NET name. For example, if John Smith and Mark Smith both wanted to join the NA-NET then mail addressed to "na.jsmith@na-net.ornl.gov" would be used to send mail to John Smith and "na.msmith@na-net.ornl.gov" would be used to send mail to Mark Smith.

NA-NET News Digest - Any mail sent to "na.digest@na-net.ornl.gov" will be considered for distribution to all members of the NA-NET. About once a week the Editor of the NA-NET News Digest will go over the messages that have queued up, pick out the ones that are thought to be of general interest to the numerical analysis and mathematical software community, combine them in a News Digest format, and mail the Digest to everyone on the mailing list.

Joining the NA-NET - To join the NA-NET send mail to "na.join@na-net.ornl.gov". In the message body specify the following three fields.

Lastname:
Firstname:
E-mail:

The values can be specified in any order. The subject line of your message is ignored. If there is a member of NA-NET with the same last name, then a message will be sent back to you. If this happens try prepending your first initial to your last name. In this case the "key" that identifies you will not be your last name. See Appendix A for an example on how to join the NA-NET.

Removing membership - To remove your membership from the NA-NET send mail to "na.remove@na-net.ornl.gov". In the message body specify the following three fields.

Lastname:
Firstname:
Key:

The values can be specified in any order. Again the subject line of your message is ignored. A message will be sent to both the deleted address and the address making the request informing you that your name has been removed. See Appendix A for an example on how to remove your membership.

Changing e-mail address - To change your e-mail address send mail to "na.change@na-net.ornl.gov". In the message body specify the following four fields.

Lastname:
Firstname:
New-address:
Key:

NA-NET
Numerical Analysis NET *

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and

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September 30, 1991

1 INTRODUCTION

The NA-NET is a mail facility created to allow numerical analysts (na) an easy method of communicating with one another. The main advantage of the NA-NET is uniformity of addressing. All mail is addressed to the Internet host "na-net.ornl.gov" at Oak Ridge National Laboratory. Hence, members of the NA-NET do not need to remember complicated addresses or even where a member is currently located. As long as moving members change their e-mail address in the NA-NET everything works smoothly.

The NA-NET originated at Stanford University by Gene Golub and Mark Kent [4], and is now under the direction of Jack Dongarra. Bill Rosener of the University of Tennessee has rewritten the software. Cleve Moler is the editor of the NA-NET News Digest.

The NA-NET system is currently located at Oak Ridge National Laboratory. It is running on the same machine that serves **netlib**. Netlib is a separate facility that distributes mathematical software via electronic mail. For more infomation on **netlib** consult [3], or send the one-line message "send index" to netlib@ornl.gov. The following report describes the current NA-NET system from both a user's perspective and also from an implementation perspective. Currently, there are over 2100 members in the NA-NET. An average of 110 mail messages pass through this facility daily.

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NA-NET
Numerical Analysis NET

Jack Dongarra

Bill Rosener

September 1991