A PERSONAL PACKET RADIO MAILBOX USING ROSERVER
Automated Packet Radio For Individuals

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This paper describes use of ROSErver' — Packet Radio **MailBox** System
by Brian Riley, **KA2BQE,** as a Personal Packet Radio **MailBox.**
ROSErver has features specifically intended for this application.
Personal **MailBoxes,** when operated correctly, enhance the Amateur
Radio Packet Network.

Advantages Of Personal MailBox Operation

Personal Packet Radio **MailBoxes (PRMBoxes[2]),** when properly configured, provide advantages to both the operators using them and the local network in which they operate.

The PRMBox operator no longer has to wait for others to clear the area Packet Radio **MailBox** System to send or receive messages. Instead, packet mail is "home delivered," and outgoing mail is entered on the PRMBox itself for automatic forwarding.

The computer running a PRMBox is always available for other use. No one else depends upon the PRMBox being available, as it is a **personal** system. The PRMBox operator can simply exit the program, do other work on the computer, and when done, return to the PRMBox.

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[1] **ROSErver is the RATS Open Systems Environment Server. See Appendix 1 for ROSErver program availability.**
[2] **There is debate whether the correct plural is** PRMBoxes **or** PRMBoxen.

PRMBoxes, when properly configured, limit their use of the packet network to "off-peak" hours. This reduces channel congestion by spreading activity over the day.

Requirements

Anyone trying to set-up and run a PRMBox should be comfortable with packet radio and MS-DOS operation[3].

Hardware required is a packet station (radio, TNC, antenna, power supply) and an MS-DOS computer, such as a "PC-Clone." The PC should have at least 384K of RAM memory. MS-DOS version 3.3 or higher is suggested. A hard disk is not necessary, as a PRMBox can run on two 360K floppies. However, as ROSErver frequently accesses disk files, performance is substantially improved by a hard disk.

In addition to ROSErver, the only software required is an editor for the ASCII text files used for configuration. Appropriate editors include the Norton Editor, WordPerfect's Program Editor, and the editor included with Procomm Plus. As ROSErver is written to operate well under both DoubleDos and DesqView, either of these programs may be used to allow other computer use simultaneously with running the PRMBox. (As mentioned above, the operator can simply exit the PRMBox program to do other work on the computer. Multi-tasking may be desireable, but is not necessary.)

The most important requirement is not under the control of the person setting up a PRMBox. A *Host MailBox*, with a cooperative sysop, is essential.

Host MailBox

A Host MailBox is a Packet Radio MailBox System, or similar PBBS, available for use by area radio amateurs, which is part of the auto-forwarding packet radio network. The prospective PRMBox operator must have a dependable RF connection with the Host.

Many of the features described in this paper are specific to ROSErver as both PRMBox and Host. A ROSErver PRMBox will work with a Host running any of the auto-forwarding PBBS programs (WØRLI, K3RLI, MBL, MSYS, AmigaBBS, etc.), but some features (especially REQMSG) will not be supported.

The Host MailBox sysop must accept automated users of his/her system, and make provisions for each PRMBox. Dave Elliot, KD6TH, is sysop of an active PRMBS in the New York-New Jersey area. KD6TH-4 is host to several PRMBoxes, including the authors. These are Dave's conditions for PRMBoxes operating with his system as host:

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[3] This paper describes an MS-DOS-based PRMBox. Other PBBS programs for other computers may be similarly adapted, but may not support all the features described here.

1. Messages are for first-party use only. No messages will be handled for third-parties on the personal system. The idea is that the mailbox is a <u>personal</u> mail box, not a part-time PBBS. So the personal mailbox user should not accept traffic for others, but is free to forward through the main PBBS to anyone, and will get, in return, all traffic addressed to him automatically forwarded. (Exceptions are made for stations with more than one licensed amateur.)

2. Mail forwarding to the personal systems will be only during non-peak hours, usually midnight to 8 AM, or 1Ø AM to 4 PM weekdays. This enables the better utilization of the PBBS, and does not interfere with manual operators using the BBS.

3. NO Beacons by the personal mailbox. They should be unnecessary, and are certainly unwanted.

4. The systems should not poll for traffic, messages will be forwarded automatically. A "poll" for new bulletins is acceptable as long as not overdone — say no more than one per day.

   These guidelines provide benefits for all concerned — they lets the automated personal system operate efficiently without affecting the other users or tying up the main PBBS.

Special Features of ROSErver

Headers

ROSErver automatically inserts a header at the top of each entered message, conforming to the RFC-822 standard. This is a sample:

> Date: 1Ø Aug 89 23:38:44 EDT (Thu)
> From: kb7uv@kb7uv.ny.usa.hamradio.org.iso (Andy Funk)
> Message-ID: < 3335@KB7UV > (Astoria,NY)
> Reply-To: kb7uv@kd6th.nj.usa.hamradio.org.iso
> To: kb4cyc@kb1bd
> Subject: Script & event info

The optional "Reply-To:" field is especially designed for **PRMBox** operation. It directs replies to the Host, which is a "known" system. Replies generated on a ROSErver are automatically addressed to the "Reply-To:" address, if included.

Events And Time

As with other **MailBox—PBBS** programs, ROSErver automatically executes programmed instructions at specified times. These *events* may be flexibly programmed. Events may be scheduled for each cycle (usually set as once each hour), each odd cycle, each even cycle, each third cycle, etc.

Additionally, events can be scheduled to run only between certain hours. ROSErver can execute, as events, both ROSErver commands and DOS commands.

Packet networks operate on UTC, while most human beings operate on local time. Computers running ROSErver can have their clocks set to any time zone, and UTC will be determined by the program.

Forwarding

Wildcards are accepted by **ROSErver's** forwarding commands. This frees the PRMBox operator from maintaining complex forwarding files. The simple command:

<div align="center">s w a p <i>HostMailBox</i> *</div>

tells ROSErver to send all outgoing mail to the Host **MailBox** and then poll for incoming mail. (See Appendix 3 for examples.)

Modes

ROSErver includes a versatile *terminal* mode, including **capture-to-**disk. A separate program is not needed for manual packet operation.

In addition to over-the-air operation using **TNCs,** ROSErver supports password protected modem access. All features are available via modem, with the addition of protocol (X-, Y-, and Z-modem) uploads and downloads.

Also password protected is *Remote Sysop* mode, which grants additional control both over-the-air and via modem. Among the special features available to Remote **Sysops** is Doorway access. This feature provides access to DOS programs **from** within ROSErver.

Special Files

Instructions for connecting to stations are stored in a special file[4]. These *connect scripts* can handle direct, digipeater, ROSE Switch, **Net/Rom,** and hybrid connection paths. Scripts can evaluate received responses and act upon them, open and close disk capture files, etc. Automatic scripted connections are used for events, and can be called manually for use in terminal mode.

Automatic address translation lets the PRMBox operator use *aliases* when sending mail. These aliases, with their translations, are kept in a simple text file **(translate.rs).** If this file contains the line:

<div align="center">tom   w2vy@kd6th.nj.usa.hamradio.org.iso</div>

messages entered to "tom" will be readdressed, and sent, to:

<div align="center">"w2vy@kd6th.nj.usa.hamradio.org.iso."</div>

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[4] **Samples of this "calldir.rs" file are given later in the text, and a complete file example is provided as Appendix 4.**

The Console

Security and versatility are provided at the computer running ROSErver, called the *console*. Hitting the ESCAPE key brings a "Login:" prompt. Hit ENTER to log on as the sysop, or enter a callsign to log on as a user. In either case ROSErver will ask for a password. This feature both provides password security at the console, protecting the PRMBox from one's children, officemates or roommates, and allows multiple users of the PRMBox. (Multi-user PRMBoxes are appropriate for clubs, schools, shared workplaces, emergency management offices, actual emergencies, public service events, etc.) Console use is also subject to a timer. If the PRMBox user is interrupted during a session at the console, the system will automatically return to on-air mode after the configurable timeout interval.

Message Handling

Unique to ROSErver is **REQMSG.** This is a way to request specific messages for forwarding to the requesting station. This feature, combined with connect scripts which automatically generate a list of new public messages on the Host MailBox, allow ROSErver PRMBox operators to be complete participants without ever manually connecting to the Host MailBox. This is described more completely under **Message Lists.**

Often the same message must be sent to several people. If the Host MailBox is a ROSErver, a single message may be sent to **rmail** (remote mail) at the Host, listing the recipients. When the Host receives it, the message will "explode" into the desired individual messages.

ROSErver also has a powerful distribution facility for managing mailing lists. This topic will be addressed in a future paper from the Radio Amateur Telecommunications Society.

Killed messages are marked for deletion, but not immediately removed from the system. Accidentally killed messages may be recovered within ROSErver, without resorting to "unerase" programs (such as Norton Utilities, etc.).

Flood distribution using Bulletin IDs, or "BIDs," is fully supported. ROSErver also supports hierarchical routing.

Message Lists

Connect Script Captures List

A scripted connect can be programmed to log onto the Host MailBox, open a capture file, get a list of new public messages from the Host, close the file, and log off. These sample scripts are used by the KB7UV-15 PRMBox when connecting with the KD6TH-4 host:

Script	Comments
>1 KD6TH	*begin script #1 for KD6TH*
@KD6TH-4	*connect to KD6TH-4*
*** EOF	*end of script*

```
>2 KD6TH              begin script #2 for KD6TH
%0 list.th            open disk file "list. th"
@KD6TH-4              connect to KD6TH-4
&2                    ignore first 2 lines received
+MailBox>             success is indicated by "MailBox>"
?*** DISCONNECTED     failure by "*** DISCONNECTED"
.l                    send "l" after success
.setmsg top           at next success send "setmsg top"
.B                    at next success send "B"
*** EOF               end of script
```

Multiple scripts can be used for the same station. In the sample above, script #1 is a simple connection to the Host MailBox. This script is used when forwarding outgoing messages. Script #2 creates a disk file ("list.th") containing a list of all new messages on the Host. The command "setmsg top" used in the script sets the "last message read" pointer on ROSErver systems to the current high message number. It is included in the script to avoid duplication in the message lists.

The message list may be left as it is, a disk file, or it can be automatically turned into a message on the PRMBox by using the **make** command as part of the event file:

```
M Ø8Ø8 poll C2 KD6TH
M Ø8Ø8 make kb7uv list.th list.th
D Ø8Ø8 del list.th
```

During the Ø800 UTC event cycle[5] a connection will be attempted to KD6TH via the COM3 port using script #2 ("C2" above). Then a message will be created to kb7uv titled "list.th" from the file "list.th." Then the disk file will be deleted, cleaning things up.

Requesting Messages

ROSErver supports remote message requests using **REQMSG.** **REQMSG** operates in the same way as **REQDIR** and **REQFIL,** but for messages instead of directories or files. If the Host MailBox is a ROSErver, a PRMBox operator can simply read the list of new messages (generated above), note which messages are of interest, and request them with a **REQMSG.** On a ROSErver this is simplified by using the **GET** command:

```
getmsg msg#,msg#,...,msg# host
```

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[5] Ø8Ø8 in the example indicates begin (Ø8) and end (Ø8) hours. The events in these examples happen only during the Ø8ØØ event cycle.

ROSErver will generate the--request message, using correct syntax. **(GET** can also generate request messages for files, directories and QTH information. See the ROSErver documentation for further details.)

An enhancement under development for ROSErver is **REQLST.** This will eliminate the need for complicated connect scripts to generate message lists. Instead, they will be handled similarly to other remote requests.

Before Setting-Up A PRMBox

First, get a copy of the program you will be using. (See Appendix 1 for how to get ROSErver.) Print and read the documentation provided?

Communication with, and permission from the sysop of your Host MailBox is essential. He/she may have rules you must follow, such as those provided by Dave Elliot, KD6TH **(see Host MailBox,** above). You'll need to be assigned time windows (minute of the hour and hours of the day) for your event scheduling.   Your Host sysop may also wish you to use a distinctive SSID for your PRMBox.   (In the New York-New Jersey area, personal MailBoxes use -15.)

Only after you have received your Host sysop's permission should you operate your PRMBox in automatic/unattended mode.

Follow the documentation to install your program. Sample ROSErver PRMBox configuration files (config.rs, event.rs, and calldir.rs), as used by the author, are provided as appendices to this paper. Use them as guides for your configuration.

Using A ROSErver PRMBox

The author has used a ROSErver PRMBox for over two years. It makes packet operation much more convenient in the hostile New York-New Jersey RF environment.

Brian Riley, KA2BQE, is the principal author of ROSErver. He is responsive to the special needs of PRMBox operators. Each revision to ROSErver has featured significant enhancements designed specifically for PRMBox use. Brian would like more people to join the development effort by running the program and sharing their experiences.

KD6TH-4 and KB1BD-4 are Host MailBoxes for several ROSErver PRMBoxes. Many of these PRMBox operators send and receive large volumes of mail. Before their PRMBox operation they had to "slug it out" with other manual packet operators during "prime time."   Now their traffic is handled automatically, during "off-peak" hours, and the host MailBoxes are more available to manual users during "prime time."

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⁶ ROSErver is a continuing project under development, and the formal documentation is not always fully up-to-date. Be sure to read any *.rme ("read-me ") files.

<u>Commands</u>

Using a PRMBox is easy. The console behaves much like an **on-the-**air PBBS connection, but with instantaneous response. ROSErver supports the following commands:

@	?	b	bell	**bye**	c
chat	clean	**cmds**	compress	d	**del**
deluser	**dir**	distrib	door	**e**	**e@**
e<	**e>**	eb	ed	edit	eh
ek	el	**ep**	es	et	event
flood	fwd	get	getdir	getmsg	getqth
h	heard	help	home	import	info
k	kd	kh	kl	km	**kp**
kt	l	**l@**	l>	l<	lb
lh	**list**	lk	ll	**lp**	**ls**
lt	lu	m	mail	make	name
poll	pollf	**port**	r	**reply**	rl
rm	rmail	**s**	sb	**sb$**	sbf
search	servmsg	setmsg	**showzip**	**sp**	ss
st	status	swap	**t**	**u**	v
vl	ver	**x**			

When sending or editing messages at the console, PRMBox operators can access their favorite text editor while remaining within ROSErver. Old messages may be kept for reference, and are available for viewing at the press of a key. Files may be made into messages and messages can be saved as files. The major message options are:

Sysop Message Editor commands:
[A]rchive/kill message [C]hange direction [E]dit message header
[F]ile message   [H]old message   [K]ill message
[N/Y] status change   [Q]uit mail   [R]ead message
[S]end reply   [T]ext edit (con)   [V]erbose read
[?] display this help   [cr] RETURN/ENTER next message

Manual Operation

Manual packet operation is also available within ROSErver. Terminal Mode is just that — the console is directly connected to the TNC. Terminal mode can optionally capture activity to disk.

ROSErver's automatic connections can be called directly from the console. Upon script completion the program automatically enters terminal mode.

Automatic forwarding may also be manually initiated. Following a terminal mode session with the Host **MailBox,** ROSErver can initiate auto-forwarding without breaking the packet connection.

<u>Semi-Automatic</u> <u>Operation</u>

Those who do not want to leave their computers on all the time may still take advantage of many benefits offered by a PRMBox. Operated this way the PRMBox functions similarly to automatic programs designed for commercial services[7]. Messages can be written, read and replied to on the PRMBox — "off line." Message transfer between the PRMBox and Host Mailbox must be manually initiated. Although they will probably be done during "prime-time," these "online" actions will take much less time than the same traffic handled manually on the Host. While not as advantageous as fully automatic operation, a semi-automatic PRMBox still helps the network by speeding traffic flow.

Conclusion

ROSErver — Packet Radio MailBox System is excellent as a personal packet radio mailbox, especially when the same program is used by the host system. ROSErver's advanced features allow the PRMBox operator to be a full participant in packet without needing to ever manually connect to a bulletin board.

Those with large volumes of personal packet traffic should consider operating a PRMBox. This will help their local network, by moving their traffic to "off-peak" hours, and add flexibility and convenience to their packet operations.

Acknowledgements

A number of people deserve mention. Brian Riley, KA2BQE, is the principal programmer of ROSErver, and continues improving the code. Dave Truli, NN2Z, was instrumental in the early development of ROSErver and is responsible for several advances. Dave Elliot, KD6TH, has helped from the first day the author tried to run a PRMBox. Rich Moseson, NW2L, assisted as copy editor. Tom Moulton, W2VY, Gordon Beattie, N2DSY, and Nancy Beattie, N2FWI, because this is partly their fault.

Special thanks to Carolyn Funk, my understanding and patient wife, for putting up with all my time spent at meetings, the @%<?{! computer and radio.

Appendix 1: ROSErver Sources

ROSErver is available for download on CompuServe's HamNet Forum, DL9, as well as the following landline BBSs:

W2XQ RBBS — (609) **859-1910** 3/12/2400 baud, 8/N/1
      Supports Xmodem, Ymodem, Kermit, MNP.
      Operated by Tom Sundstrom, W2XQ.

RTC RBBS — **(609) 654-0999** 3/12/24/9600(HST) baud, 8/N/1
      Supports Xmodem, Ymodem, Kermit.
      Operated by Terry Rossi.

RATS UNIX — **(201)** 387-8898 1200 baud, 7E1
      Supports Xmodem, Kermit will be added soon.
      The Radio Amateur Telecommunications Society maintains this Unix
      system for support of RATS projects, including ROSErver. At the
      "login:" prompt enter "rats" (lower case!), no password is needed, and
      follow the directions provided.
      Operated for RATS by Gordon Beattie, N2DSY.

The author will provide copies of his system, complete with configuration files. Send formatted MS-DOS diskettes (two 5.25" or one 3.5"), a diskette mailer, and return postage.

The principal programmer of ROSErver is Brian B. Riley, **KA2BQE**. He can be reached the following ways:

Mail:	c/o MorningStar Keep, Ltd.
	Post Office Box 308
	Medford, New Jersey 08055 (USA)
Packet:	ka2bqe@wb2mnf.nj.usa.hamradio.org.iso
CompuServe:	71420,3543
USENET:	rutgers!hotps!n2dsy-4!ka2bqe

Appendix 2: Configuration File

This is the configuration file used by the author with ROSErver version **0.99g, 08/19/89,** operating as a **PRMBox:**

```
099g 08/19/89
#
# CONFIG.RS for KB7UV-15
#
```

```
# Local Console Port
LCE 15 15 0 0000
Connected
# ANSI Color keys - background
# 0-black, l-red, 2-green, 3-brown, 4-blue, 5-magenta, 6-cyan, 7-lt gray
#
# ANSI Color keys - Text
# 0-dk gray, l-orange, 2-green, 3-yellow, 4-blue, 5-magenta, 6-cyan, 7-white
#
# Color strings for port [Text Color],[Background Color]
#
3,4
# (A port) COM1 would go here if it were being used
# ------ Above this point is all Port A ------
# B,C,D,E ports could be in here
#
#    KB7UV-15 is set up for COM3, Port C, because that's where the TNC is.
#
# ------ COM3 Port TNC, Ham calls only -----
# 9600 baud - only for newer TNC2 clones or with TL084 in place of LM324s
CTH 7 15 4800
145.07 MHz
7,4
YES (is TNC2 or compatible)
YES (a unit capable of supplying DCD for CONN/DISC indication)
NO (send a 'mail for' beacon on this port)
NO 2303 10000 (Download window active )
# String to shutdown mon and conn for this TNC
conok off
mon off
BT [System in use by User]
b e 0
*** EOF
# string to be sent to TNC when going INTO TERMINAL MODE
se !§0d
cr on
cp off
*** EOF
# string to be sent to TNC when coming OUT OF TERMINAL MODE
se $7f
cr off
cp on
*** EOF
# String to this TNC when going back online awaiting connection
mycall KB7UV-15
se $7f
cr off
cp on
maxf 2
retry 12
mon on
conok on
```

b e 0
*** EOF
# optional appendage to forwarding header, (line must be here but may be
# be left blank
PRMBox
NO 1004 10000 (Forward window not active)
This EOF is the end of ports in general
*** EOF
# ----------------- end of port configurations ----------------------------
#
NO (send Bell characters to console in text i/o)
#
#Color String of BBS output
3,4
#Color String of Local Status Display
7,1
String sent out to TNCs when other port busy
BT [BBS in use on other port]
B E 0
*** EOF
# Normal BBS prompt
$Tz, $N msgs @$O MailBox>
Remote Sysop string
Next?$H
Local CONSOLE prompt
At $Tz: [$QKb] $N msgs, last #$L> $H
Setup into normal logged user
PACT A 14
*** EOF
# Setup into remote sysop
PACT A 8
*** EOF
# TNC shutdown string
conok off
mon off
*** EOF
# Call of this station - do not use SSID it gets stripped anyway
KB7UV
Hostname/Domain specification, your call is derived from this also
kb7uv.ny.usa.hamradio.org.iso
#
Reply-to host system name place 'NONE ' (include space) if you receive mail
at your own-system. If you are personal bbs and receive mail from another
host system, fill this line in with host name of same form as domain name.
If it is used it is in the form of kd6th.nj.usa.hamradio.org.iso.
#
kd6th.nj.usa.hamradio.org.iso
Astoria, NY
Andy Funk
help.rs
menu.rs
info.rs

54

event .rs
calldir.rs
fwd\
log.rs
mon.rs
user accessible files area
files\
use upload\ as name for the directory - if it does not exist uploads go
to files\ path of tree specified by user, if it does all uploads
go here
files\
directory. that messages texts will reside
mail\
directory that temporary **file/mailmessage** upload will reside, usually
the same as the directory for the final texts, but may be specified
as an alternate in case you have a RAM disk available. This would
increase the speed of MAIL and RMAIL enormously.
mail\
mail.dat
user.dat
name and path of file to archive mail
oldmail.kld
6   (number of consecutive bad commands til disconnect)
100 (Kbytes minimum disk space - turns off S and U commands)
20 (Kbytes of space above minimum for disk_full to be turned back off)
---- Logging Options ------
YES (Turn on logging)
YES (Log file transfers)
YES (Log message events)
YES (Log local events)
----- Remote SYSOP Password String --- may be up to 240 characters
10   THIS-IS-THE-PASSWORD-STRING-FOR-REMOTE-SYSOPS...READ-THE-ROSERVER-
DOCS!
---
This string starting in column 4 as a string from which the program will
generate 10 random numbers that represent positions in the string, (L = 0)
You may have it generate up 16 digits, the program will take any number
you give it, but will cut it back to 16 if it is over! The password response
is case **insenstive** and may not include spaces. The character set is the
standard 'low order' (that is printable ASCII 32-126) ASCII set. The
string you set up may be upt to 240 characters long and may, as mentioned
above, include spaces in the middle of the string.
**** IF YOU SET IT TO 0 - no password will be required ****
---
----- Event Scheduler Timing parameters -----------
20 MIN 60 CYCLE **4** OFFSET (Parameters are positional MUST be in 1,3,5 pos.)
----- Message Handling parameters -----
NO (for non-F type messages remove message and text file immediately on fwd)
YES (save killed messages to **OLDMAIL** file)
YES (YES = save traffic only, NO save all killed messages)
YES (Generate Service Message during KT)
YES (transfer TO field to @ field for message w/numeric TO and blank @)

YES (list TRAFFIC zipcode TO fields in 'Mail for' banner)
----------- the string sent when he makes a boo-boo -----------
*** ?? Unknown command. (Type 'cmds' and/or '?' for help)

Appendix 3: Event File

The syntax for ROSErver event file entries is:

type   start/end hours   command

where *type* may be **MailBox** or **DOS;** *start/end hours* are each two digits, military time; and *command* is either a ROSErver or DOS command.

This is the event file used by the author:

```
M Ø1ØØ chat off
M Ø513 swap Cl KD6TH *
M 1721 swap Cl KD6TH *
M Ø8Ø8 poll C2 KD6TH
M Ø8Ø8 make kb7uv list.th list.th
D Ø8Ø8 del list.th
D Ø1ØØ del \roserver\mail\*.~ *
D 2Ø2Ø fr c: /save
D 1Ø1Ø fr c: /save
D 1Ø1Ø COPY MAIL.DAT MAIL1Ø.DAT
D 1Ø1Ø COPY USER.DAT USER1Ø.DAT
```


Appendix 4: Connect Scripts

This is the calldir.rs file used by the author:

```
>1 KD6TH
@KD6TH-4
*** EOF
>2 KD6TH
%O list.th
@KD6TH-4
&2
+MailBox>
?*** DISCONNECTED
.l
.setmsg top
.B
*** EOF
>1 K2ULR
@K2ULR-15
*** EOF
```