

**NAME**

udd /- directory update daemon

**SYNOPSIS**

```
udd [newsgroup(s) ...] [-subject | -newsgroups | -count]
      [-a | -o] [-e] [-r] [-mailbox] [-u usernewsr]
      [-C] [-interactive] [-V?] [-L termlines]
bbr [newsgroup(s) ...] [-a] [-e]
bbpost [newsgroup] [-edit] [-s subject] [-a attachment]
rbbpost newsgroup
datepost newsgroup
```

**DESCRIPTION**

These programs provide enhancements over the standard UNIX *news* mechanism that include simplified preparation, the categorization of articles by interest group, and the concurrent posting of bulletins on multiple machines. This system also provides advantages over the old UNIX *msgs* system. These programs are part of a software tool package called *Personal Communication Services* or PCS in abbreviated form. The PCS software tools are a set of cooperating and integrated programs that perform personal communication and management type functions for users. Some services available with the PCS package include: mail, bulletin board, message display, calendar, and event reminder type services. Only the bulletin board related programs are primarily discussed further here.

Basically, the bulletin board facility consists of a newsgroup spool area (someplace in the UNIX file systems) which contains *articles* which have been posted to various *newsgroups* within the news spool area. Articles are similar to email messages and are placed on various newsgroups or "bulletin boards". A newsgroup is a subarea within the entire news spool area that contains articles which are usually related by similar subject matter. The notion of what articles belong to which newsgroup is purely a user one and the system doesn't try to enforce any policy of where user articles should be posted. Hierarchical newsgroups are supported. When newsgroups are nested within each other, the name of the newsgroup is a composite type of name similar to a UNIX path name but with periods used to separate parent newsgroup names from the subnewsgroups within them. Newsgroups can be nested to any level. Some example newsgroup names might look like:

```
general
general.newuser
tools
tools.i286
tools.mc68
tools.latk
tools.ogs
news.ho
news.lz
news.dr
msgs.ho
msgs.lz
misc
```

Associated with each newsgroup and user is the concept of currency. Currency refers to the last time a user has read the articles on any particular newsgroup. All articles which have been created or modified since the last time the newsgroup was read are considered current.

A user can individually subscribe to the newsgroups of their choice. The default list of newsgroups to be selected for reading is specified by the environment variable BBBDS. This can be set by either manual editing of the user's profile related information (usually in the user's file *.pcspfile*) or by means of one or more utility type programs designed to aid in bulletin board newsgroup selection and subscription. Newsgroups can also be subscribed to by manual editing of the user's newsgroup list file (usually *.bbnewsr* in the user's HOME directory). Within the user newsgroup list file, those newsgroups

followed by an exclamation character are considered unsubscribed while those followed by a colon character are considered subscribed. A union of the list of newsgroups in the environment variable `BBBDS` and the subscription information from the user's newsgroup list file is used as the default set of newsgroups to scan for new articles. Other newsgroups can be scanned for articles when a newsgroup is given on the command line at invocation of the *bb* program.

### The *bb* Program

When invoked without arguments, the *bb* program prints all unread articles on the set of newsgroups selected for reading and updates the user's currency time with respect to these newsgroups. When invoked with a newsgroup name, the program prints the unread articles and updates the currency time on that newsgroup.

The default behavior of the program (in the absence of any of the options `-subject`, `-newsgroups`, `-count`) is to read unread articles from the newsgroups that are selected for reading by the user. By default, selected newsgroups are those that the user is subscribed to. If the user has listed one or more newsgroups on the command line, then these are used instead of the user's subscribed newsgroups. The program displays each unread article from the selected newsgroups and then pauses to prompt the user for one of the following commands:

<i>Command</i>	<i>Action</i>
<b>next</b>	This command displays the next unread article. This is default action and can also be entered with a plain carriage return.
<b>previous</b>	This command can be used to possibly display the previous (already read) article in the current newsgroup. Currently, there are limitations to this command. Since newsgroups can actually be realized by multiple directories in the UNIX file systems, not all previous articles are currently available for retrieval due to limitations in the software. Only previous articles that are stored in the same UNIX directory can be retrieved. Also, previous articles that the user read in previous bulletin board reading sessions are currently not available either. One or both of these restrictions may be removed in the future.
<b>review</b>	Display this article again.
<b>follow</b>	This command is used to follow- up on the current article by posting a new article to the same newsgroup. The <i>bbpost</i> program is invoked so that the user can enter a follow- up article.
<b>reply</b>	invoke <i>pcsmail</i> (or <i>sendmail</i> ) with the recipient and subject defaulted. This is analogous to the reply in <i>readmail</i> and facilitates responses to the author of an article.
<b>save</b>	Save the previously read article in the user's "new" mailbox.
<b>print</b>	Print out the previously read article to the user's default printer as specified with the <code>PRINTER</code> environment variable. The article is printed in a specially prepared format for news articles. Essentially, about two pages worth of article are printed per paper page in landscape orientation. The underlying print mechanism that is invoked is the PCS print program <i>pri-pcsmail</i> . This command can take additional options. Any options specified are passed down to the <i>pri-pcsmail</i> program. This is most commonly used to change the printer destination or the number of copies with a command like: <pre>print -d di2 -c 2 -s 2</pre>
<b>Next</b>	This command is used to skip reading the rest of articles in the newsgroups that is currently being read and start displaying unread articles from the newsgroup that has any unread articles (if there is one). Articles that are skipped are marked as being read.

**This command is not implemented yet.**

**Previous** This command is used to go back to a previous newsgroup and start reading the last article in the newsgroups.

**This command is not implemented yet and may not be for quite a while.**

**Skip** This command is used to skip reading the rest of articles in the newsgroups that is currently being read and start displaying unread articles from the newsgroup that has any unread articles (if there is one). Articles that are skipped are not marked as being read.

**Catchup** This command is used to skip reading the rest of articles in the newsgroups that is currently being read and start displaying unread articles from the newsgroup that has any unread articles (if there is one). Articles that are skipped are marked as being read.

**This command is not implemented yet.**

**quit** Terminate bulletin board reading (and update currency).

**?** This prints out some brief help consisting of some of the commands and their function.

**Save** This is a sneaky (previously undocumented) command which appears to suspend the current bulletin board reading session but the exact consequences of this is not known by the author and the user is advised to play with this at her own risk.

| (*pipe character*)

This is a previously undocumented command which appears to pipe the current article out to a program specified after the pipe character. Users are advised to use only at their own risk.

> (*redirect output character*)

This is a previously undocumented command which appears to write the current article out to a file name which follows after the output redirect character. Users are advised to use only at their own risk.

The *bb* program may also be invoked with the following options preceded by a "-" character (or "+" in the case of the *old* option -- deprecated). These options can usually be specified in as few letters as necessary to distinguish them uniquely. Only one option of *-subject*, *-newsgroups*, *+count*, (or *+old* if still supported by the system), may be specified at one time. In the absense of one of these preceding options, the program **reads** unread articles on the newsgroups selected. These are basically, the four functions (not including that provided by *+old*) that the program performs. Unless the "-e" option is specified, only the newsgroups to which the user has subscribed will be accessed. The execution mode of the program can be changed with the following command line options:

<b>-subject</b>	Print the subjects of articles.
<b>-newsgroups</b>	List the names of the newsgroups. An old option ( <b>-boards</b> ) performs the same function as this option.
<b>-count</b>	This option causes the number of articles on each newsgroup to be counted and the counts outputted.
<b>+old</b>	Print the subjects of all articles regardless of currency. This option is depreciated in favor of:

`bb -subject -a`

which provides the same function.

The following options display information about the program:

- **V** Print out the version of the program and then exit.
- **?** This option causes the program to print a brief description of command line options and then the program exists.
- **D** This option causes internal program debugging information to be written to standard error as the program executes.

The behavior of the *bb* program can be modified with the following options:

- **L *term*lines** This option sets the number of terminal lines that will be used by the program to *term*lines. This will override the *LINES* environment variable if it is specified.
- **o** This option modifies the program behavior to act only on "old" articles rather than the default behavior which is to act only on "new" articles. The definitions of "old" and "new" are relative with respect to the user's newsgroup currency time. If the *-a* option is also supplied, it takes precedence over this option.
- **a** Print all articles for whatever newsgroups are selected, regardless of currency, both "old" and "new". This option takes precedence over the *-o* option if it is also present.
- **r** This option is used to reverse the order in which articles are visited. Normally when this option is omitted, articles are visited oldest first and latest last. If this option is given, then articles are visited latest first and oldest last.
- **e** Modify the behavior of the *bb* program to make reference to every newsgroup that exists in the bulletin board spool directory area (*BBDIR*). When combined with other options, this permits newsgroups that are not subscribed to by the user to be accessed.
- **interactive** This option selects whether *bb* behaves interactively or not. The most common use of this is to catch up on unread articles non- interactively. Some clever users may use the non- interactive mode of the program to simply get the articles written out for postprocessing of some sort. The "mailbox" option is usually better for this sort of use but non- interactive mode is retained for backward compatibility for some old time users. This option is only used during "read" mode operation.
- **mailbox** This option is used by the *bbr* program (described later) to have the news articles (selected by currency time) formatted for use by a mail reading program like **vmail** or **readmail**. This option can also be used by those users who want to write various article filtering programs or the like for article sorting or alternate presentations. This option only has meaning while **reading** articles. This option is only used during "read" mode operation.
- **C** This option is only useful when the program is in the "read" mode of operation. This option causes the command output (prompts, et cetera) to be mixed with the message output. This is sometimes useful for when both types of output is filtered through some sort of other program while still running the *bb* program interactively. Normally, if standard output is not a terminal, command like output is routed to standard error rather than standard output. This behavior is kept for backward compatibility reasons.

#### The *bbr* Program

The *bbr* program collects all the "current" articles from the user's selected newsgroups and puts them into the user's mailbox *bbtemp* (user's file `${HOME}/mail/bbtemp`) suitable for viewing with a mail reader program like *rdmail* or *vmail*. These articles are no longer considered "current" like when *bb -subject* is run.

#### The *bbpost* Program

The *bbpost* program is used for preparing and posting articles to newsgroups. The user is prompted for the newsgroups (sometimes referred to as a *board*) to post to (prompt is `NEWSGROUP` or `NEWSGROUPS`), the subject of the article (prompt is `SUBJECT`), and the text of the article. The *bbpost* program adds *FROM* and *DATE* information to the article before submission into the bulletin board system.

After the article is entered by the user, *bbpost* prompts for one of the following commands:

<i>Command</i>	<i>Action</i>
<b>post</b>	Post the article to the specified newsgroup.
<b>review</b>	Print out the article for review by the user.
<b>edit</b>	Edit the article (the <code>NEWSGROUPS</code> and <code>SUBJECT</code> fields may also be edited).
<b>quit</b>	Terminate session without posting the article.

The *bbpost* program then posts the article to the bulletin board system. Note that posted articles are usually transported throughout the bulletin board system which may contain many machines with several different newsgroup spool areas. Up to an hour or more of time may be needed for an article to appear in other machine spool areas, depending on how articles are transported.

If the `edit` option is used, *bbpost* will enter the editor for the typing of the message. The `"-s subject"` command line option will bypass asking the user for a subject and will use the supplied subject (specified by *subject*) instead. If *subject* has spaces or other shell offending characters in it, it should be quoted appropriately so that the shell will leave it alone. The `"-a attachment"` command line option will append a file specified as *attachment* to the composed article. The program will still ask the user to enter some text and after the user types the period character to end the text, the program appends the specified file. If the user now "edit"s or "review"s the article, the attachment will be seen and can be further edited if desired.

#### The *rbbpost* Program

The *rbbpost* program is similar to the *bbpost* program in that it is used to post an article into the bulletin board system. This command differs significantly from the *bbpost* program in that it is completely non-interactive. This command reads an article file on its standard input only and posts it to the newsgroup specified as the program's invocation argument. The input file is assumed to be in an article format already. An article formatted file is similar to a file formatted as a mail message and in fact this is the most common use for this command ; namely, to post mail message files from a user's mail reading program. Actually, any input file that minimally begins with a blank line is acceptable and the *rbbpost* program will add some additional article headers as appropriate if necessary.

A typical example of using this program is to post an article from a user's mail reading program such as PCS *vmail* or PCS *readmail*. In these mail readers, the user would "pipe" the current message to the *rbbpost* program with a command sequence similar to:

```
| rbbpost newsgroup
```

where *newsgroup* is the name of a valid newsgroup for the system such as:

```
misc
general
```

and so forth.

#### The *datepost* Program

The *datepost* program is similar to the *rbbpost* program. The only difference between this program and the *rbbpost* program is that the posted article isn stored in the newsgroup spool area in a file name that has a date type format. This feature is useful for posting to newsgroups that are linked to message storage areas that may be scanned by looking at file names. Since articles are implemented as files in the system, storing the articles with a file name that reflects the date of the posting is sometimes useful.

This program is otherwise used exactly as the *rbbpost* program. Postings usually originate from a user's mail reading program such as PCS *vmail* or PCS *readmail*. In these mail readers, the user would "pipe" the current message to the *datepost* program with a command sequence similar to:


```
| datepost newsgroup
```

where *newsgroup* is the name of a valid newsgroup for the system such as:


```
events
misc
general
```

and so forth.


## EXAMPLES

 Most people put the following command line in their login startup profiles to list out the articles posted in the newsgroups for which the user is subscribed:


```
bb -subject
```

 To just read unread articles from the user's subscribed newsgroups, execute:


```
bb
```

 To catch up on unread articles, without seeing them, execute:


```
bb -int > /dev/null
```

 To read unread articles in the order from the latest one posted to the earliest one posted:


```
bb -r
```

 To get the names of all of the user's subscribed newsgroups:


```
bb -newsgroups
```

 To get the names of all of the newsgroups in the system:


```
bb -newsgroups -e
```

 To search for a newsgroup (*SWAPEX\_Classes* in this example) when you only remember a few characters from the name of the newsgroup, execute:


```
bb -newsgroups -e | fgrep APEX
```

 To get the subject header values of unread articles on the user's subscribed newsgroups:


```
bb -subject
```

 To get the subject header values of all (old and new) articles on the user's subscribed newsgroups:


```
bb -subject -a
```

 To get the subject header values of all articles on all newsgroups in the system:

```
bb -subject -a -e
```

 To get the count of unread articles on the user's subscribed newsgroups:

```
bb -count
```

 To get the count of all old articles still in a newsgroup (the newsgroup *general* in this case):

```
bb -count -o general
```

## POPULAR NEWSGROUPS

Some of the more popular newsgroups listed below. Some of these newsgroups are read only to normal users. Those newsgroups that are read-only or that may have other restrictions are identified as such below. Some newsgroups are also accessible (can be posted to) from outside of GBCS via email. Your PCS

bulletin board administrator (listed at the end of this manual page) will have information on which newsgroups can be posted to via email.

The descriptions of the more popular newsgroups are:

<b>general</b>	This newsgroup is meant to exchange articles on general items related to work. Do not use this newsgroup for non- work related topics.
<b>general.newuser</b>	This newsgroup carries information useful to new members of the GBCS R&D or other basic information useful for using the R&D computing environment for the first time.
<b>misc</b>	Use this newsgroup for all non- work related items.
<b>events</b>	This newsgroup is used for work related events coming up like organizational wide meetings or other corporate AT&T activities.
<b>events.courses</b>	This newsgroup is used to provide information on general courses available that that not normally carried on any other newsgroup.
<b>workplace</b>	This newsgroup is used for the exchange of workplace, or quality of workplace, related issues.
<b>tools</b>	This newsgroup is used for the exchange of tool related information. Watch this newsgroup for new R&D- wide computer tools and tool updates including PCS related tools.
<b>luncheons</b>	This is used for the posting of all luncheon announcements.
<b>jobposts</b>	This newsgroup is readonly (to normal users) and is used to provide information on job openings within GBCS (usually the R&D community).
<b>ATT_today</b>	This newsgroup (also readonly) carries the <i>AT&amp;T Today</i> electronic newsletter.
<b>test</b>	This newsgroup can be used by new users to test out posting an article to the system.
<b>news</b>	This newsgroup and related subnewsgroups are usually used by the computer center to post computing environment related information (usually of a transient nature). This newsgroup is special in that it is really cross posted from the UNIX News facility. Posts may or may not be possible to this newsgroup depending on how the computing administrators set it up. Sometimes, posts can be made to this newsgroup but will not be readable using the UNIX <i>news</i> program. Ask your PCS bulletin board administrator (listed at the end of this manual page) for information about how posting (if any) can be made to this newsgroup.
<b>msgs</b>	This newsgroup, or its subnewsgroups, are used to hold all articles that were mailed into the system through the UNIX MSGS facility. Although articles can be posted to this newsgroup like any other using a PCS program like <i>bbpost</i> , these posted articles will normally <b>not</b> be available to the UNIX <b>MSGS</b> system reader program <i>msgs</i> . Generally, it is advised that the <i>msgs</i> program be used for posting to this newsgroup for articles to be available to both systems simultaneously (as generally intended).

Many projects usually have project specific newsgroups for various purposes. Contact your project's process or methodology people for information on newsgroups specific to your project. A full list of all of the newsgroups on the system at any time can be made by executing:

```
bb -newsgroups -a
```

Requests for the creation of new newsgroups should be made to the PCS bulletin board administrator.

## ADMINISTRATION

### Newsgroup Spool Area

Each newsgroup is actually one or more directories in a news spool area someplace in the UNIX file systems. The appearance of a directory any place in the hierarchy of the spool area is automatically considered to be a newsgroup (possibly a new one) and is scanned for new articles. Symbolic links are followed when traversing the newsgroup spool area. Symbolic links allow for several possibilities including expanding the apparent newsgroup spool area to a size larger than a physical UNIX file system. Other possibilities can include linking more than one newsgroup together to provide a physical newsgroup by two or more apparent names. The hierarchy of newsgroups follows the UNIX directory hierarchy of the newsgroup spool area. Specifically, subdirectories are taken to be subnewsgroups. Both parent newsgroups and subnewsgroups can contain articles. Newsgroup nesting can occur to any level desired. Currently, hierarchical newsgroups are also realized when a UNIX directory name has one or more period characters in it. The period in these sorts of directory names separates the parent newsgroup name (which can never contain any articles since there is no actual physical directory associated with it) from the subnewsgroup name. The directory itself is considered to be the one that holds the article files for the subnewsgroup. Full newsgroup names made up by both of the above mechanisms can exist simultaneously in the spool area and they are taken to reference the same apparent newsgroup to the user. All articles in any newsgroups found with the same apparent name are scanned and taken to be in that single apparent newsgroup. This mechanism, along with symbolic links, can make for some involved newsgroup structures which may or may not serve particular administrators. Finally, there is no limit to the number of newsgroups that can exist.

### Articles

Each article is actually realized as an individual file in a newsgroup directory. The UNIX modification times of the article files are taken to be the posted date of the articles. Although the UNIX modification time of an article file is used to determine if that article has been read by a user, the UNIX modification time of the newsgroup directory that the article file is located in is also important. When scanning for new articles, no newsgroup directories are entered that have a modification time older than the currency time stored for that newsgroup in the user's newsgroup list file. Old articles can only be made to be freshly current by also updating the modification time of the newsgroup directory that the article is in. This is rather automatic for new articles placed into a directory since the modification time of the directory is updated automatically when new directory entries are made.

Articles should be formatted as RFC 822 like mail messages (UNIX mail messages) in order to be properly processed by the PCS article reading programs. The PCS requirement for properly formatted mail messages is a rather lenient one in that any file with at least a leading blank line (a null header section followed by a mail message body) is allowed. Finally, there is currently a limit of 1000 articles allowed per newsgroup. This is a compile time variable which would require a recompile of the program *bb* in order for this to be changed.

### Expiring Articles

The easiest way for an administrator to expire articles is to simply have their corresponding files removed from the newsgroup spool area. This can be accomplished with various UNIX utilities for selecting files based on modification times. Administrators can also search for files ignoring symbolic links or UNIX mount points. These sorts of techniques can be used to not expire articles that are in symbolically linked directories or in other file systems. A simple example of expiring articles could be a *cron* program which executes:

```
find $BBDIR -type f -mtime +22 -exec rm -f {} ;
```

Other strategies are possible and are left to the industrious system administrators out there.

### Other

Secretly, the program *bbr* simply calls the *bb* program with the `mailbox` option to do most of its work. Under some circumstances, the PCS mail reader program *vmail* also calls the *bb* program with the `mailbox` option when a user of *vmail* uses it to "change" into their *bbtemp* mailbox. In this later case, the *bb* program ensures that the user's *bbtemp* mailbox is "up-to-date" so that the *vmail* program shows the current state of the updated mailbox.



The *rbbpost* program is suitably capable of being executed by the UUCP system as a result of a remotely executed *uux* command. This provides one means of posting articles to a system from outside of the system. A remote user would execute something like:

```
uux -p mtgbcslrbbpost misc < mail_msg_formatted_file
```

to get the message in the *mail\_msg\_formatted\_file* posted to newsgroup *misc* within the PCS bulletin board system on machine *mtgbcsl*. Of course, this capability requires the UUCP system administrator to setup the *rbbpost* program in the UUCP system *Permissions* file.

If the administrator has the MSGS system spool area directory coincide with a PCS bulletin board newsgroup (reference the discussion in the next section), then users can also effectively post messages to the coincident newsgroup by emailing to the local email alias *msgs*. This requires that the *msgs* email alias has been setup on the local mail system. Users can still post messages using something like:

```
msgs -s < mail_msg_formatted_file
```

similarly to the previous example with the *rbbpost* program. The *msgs* program can also be executed by the UUCP system due to a remote execution of *uux* if the command is properly setup by the UUCP administrator in the UUCP system *Permissions* file.

## COMPATIBILITY WITH OTHER NEWS SYSTEMS

The protocol used for the storage of articles in the PCS bulletin board system is similar to both the standard *Netnews* system and the old *msgs* facility for UNIX systems. Since articles are stored in the PCS bulletin board system as mail messages (of a sort), a high degree of compatibility is achieved with both standard RFC 822 mail systems (including UNIX mail) and the old UNIX *msgs* system (which was popular on older BSD systems).

### UNIX MSGS System

Compatibility is almost automatic with the UNIX *msgs* system. With the exception of a file usually named *bounds* in the *msgs* spool area, all message articles can be cross posted to the PCS news spool area. One or more newsgroups by the name **msgs** or **msgs.location** can be created under the PCS news spool area to hold the message files which are created under the *msgs* (proper) spool area. If the spool areas (the *msgs* system spool directory and a PCS newsgroup directory) are in fact one and the same, then the *msgs bounds* file will almost always be found to be unread (or current) by the PCS system. This can be overcome by selectively cross posting the other files in the *msgs* area to the designated newsgroups under the PCS spool area. An enhanced version of the older UNIX *msgs* facility is provided with the PCS package and can be installed to solve this problem with the *msgs bounds* file. The PCS version uses a file named *.msgs\_bounds* as its bounds control file instead and also, by default, locates the *msgs* spool area directory at *\${PCS}/spool/msgs* or something similar. This default spool directory can be a symbolic link to a regular PCS newsgroup directory which is normally desired. Making the *msgs bounds* type file start with a dot (period character) makes the file invisible to the PCS newsgroups reading programs.

### UNIX News System

Files (or news items) placed under the UNIX news spool area (usually */var/news*) are not automatically compatible with the PCS news system since the UNIX *news* system's articles are not, necessarily, in mail message file format. If all articles posted to the UNIX *news* system are minimally formatted as mail messages, then complete cross posting is supported as well as simply making the two corresponding news spool areas one and the same. A minimally conforming mail message file (for purposes of the PCS news system) consists of a file with a blank line as the first line. This leading blank line is interpreted as the end of the header section of the mail message and therefor meets the minimal requirements for a mail message formatted file. If UNIX *news* files are not known to conform to mail messages, then allowing the PCS system to read them will result in totally unpredictable behavior.

### Netnews

Full compatibility with the standard Netnews system should be automatic. Care should be taken to ensure that PCS posted articles conform to the requirements for Netnews articles. Restrictions on the article's FROM header is required for Netnews posting that is not present in the PCS system. This is the only known potential problem.

## ENVIRONMENT VARIABLES

The following environment variables tailor the bulletin board services to the user's personal preferences. These variables used to be set and updated by the PCS profiler program but should now be changed manually by the user editing her `.pcspfile` file in her HOME directory.

<b>ED</b>	The default program to use for the editor.
<b>EDITOR</b>	This environment variable is used to specify an editor program when <i>ED</i> is not set.
<b>LINES</b>	This environment variable sets the number of terminal lines to be used by the program. If the number of terminal lines is given on the command line, then that value is used instead of this environment variable.
<b>BBNEWSRC</b>	This environment variable, if specified, gives the name of the user's newsgroup list file. If this variable is not specified, then the default file <code>\${HOME}/.bbnewsrsc</code> is used. The user's newsgroup list file can also be specified on the command line with the <code>-u user_news_file</code> option.
<b>BBOPTS</b>	This environment variable contains user preference options for use in one or more of the bulletin board system commands. Currently only the <code>"-edit"</code> option for the program <i>bbpost</i> is supported.
<b>BBBDS</b>	This environment variable contains a list of the newsgroups subscribed to, separated by a colon (':') character. As mentioned previously, the list of newsgroups that the <i>bb</i> program uses is a union of the list of newsgroups in this environment variable along with the list of newsgroups in the user's newsgroup list file (usually <code>\${HOME}/.bbnewsrsc</code> ) which are followed by colon characters rather than exclamation point characters.
<b>PRINTER</b>	This variable should contain the printer destination for the user's default printer. This environment variable is used by the <i>pri- pcsmail</i> program. If this variable is not set, then some sort of default is used but this is almost guaranteed to not be what the user wants.
<b>BBDIR</b>	This environment variable is used primarily for system testing or for a user to have some sort of private newsgroup spool area. Otherwise, this variable should be unset or left alone. When used, this variable should hold the directory path to the top of the newsgroup spool area (usually determined by the system administrator). A typical location for this is <code>\${PCS}/spool/boards</code> . The path to the newsgroup spool area can also be set with the command line option <code>-N news_spool_dir</code> .
<b>PCS</b>	This environment variable is used to point to the PCS package directory. This is usually at <code>/usr/add-on/pcs</code> but may not be on some systems. Not all programs in the PCS tool set may be safely relocated by changing this environment variable. For proper user operation, it is recommended that this environment variable always point to the location of the properly installed system- wide PCS package distribution directory.

## FILES

<code>\${HOME}/.pcspfile</code>	default user's profile type file containing PCS related environment variables
<code>\${HOME}/.bbnewsrsc</code>	this is the user's default newsgroup list file when one is not specified on the command line or in the environment variable BBNEWSRC
<code>\${HOME}/.user_bds</code>	this is the user's default newsgroup list file when it is not specified on the command line, in the environment variable BBNEWSRC, and when the user does <b>not</b> already have a file named <i>.bbnewsrsc</i> in her home directory
<code>\${HOME}/mail/bbtemp</code>	user's default mailbox to receive articles scanned by the <i>bbr</i> program
<code>\${HOME}/mail/new</code>	user's default mailbox to receive articles "saved" by the user while executing the <i>bb</i> program

<code>\${PCS}/bin/bb</code>	executable program
<code>\${PCS}/bin/bbr</code>	executable program
<code>\${PCS}/bin/bbpost</code>	executable program
<code>\${PCS}/bin/rbbpost</code>	executable program
<code>\${PCS}/bin/datepost</code>	executable program
<code>\${PCS}/bin/pcsjobfile</code>	utility program
<code>\${PCS}/bin/pcscl</code>	utility program
<code>\${PCS}/src/bb</code>	directory of source files
<code>\${PCS}/spool/boards</code>	default newsgroup spool area directory

**SEE ALSO**

`pcsmail(1)`, `vmail(1)`, `prt- pcsmail(1)`, `msgs(1)`, `news(1)`

**PCS BULLETIN BOARD ADMINISTRATOR**

Mark Leeper

**PROGRAM AUTHOR**

Dave Morano

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