OpenBCM v1.06

Forward configuration

(translated from german docu chapter 9).

04.07.2006 DH8YMB Markus Baumann

Overview

1. Configuration of complete forwarding

The forward configuration is defined in file *fwd.bcm* which include all needed information. The file describes which forward partners exist and at which time which mails are send.

The reception of mails from the forward partners can't be influenced by *fwd.bcm*!

In file *fwd.bcm* is a section for each forward partner, which contains:
- the name of the forward partner (callsign without SSID)
- timetable, when forward connects should be made
- how to connect the forward partner (connection path)
- options for that forward partner section (e.g. maximum size of a mail, etc.)
- definitions which mails should be send to the forward partner

While the first point are easy to define, the last point is the one, which is really hard to define and where the most mistakes are made.

For bulletin mails exists the directors (that part, that is normally used with the SEND command after the "@"). For usermails the hierarchical address of the target home mailbox of the receiver is used.

Example for a usermail:
```
    DF3VI @ DB0HOM.#SAR.DEU.EU
            ^Address (hierarchical address of target mailbox)
    ^Target callsign
```
Example for a bulletin:
```
    LINUX @ DL
            ^Address (Director)
    ^Receiverboard
```

These are the two main used criteria for mail routing. Additional criteria are mentioned later.

1.1. The theory of analysis a hierarchical address

Following is an example of a hierarchical address:

```
    DB0AAB.#BAY.DEU.EU
                    ^ Continent EU (stands for europe)
                ^ Country (DEU means Germany/Deutschland)
            ^ Possibly further definition of a region (#BAY means Bayern)
    ^ Callsign of a mailbox
```

The designator for continents is two or four letters long. In Europe you should only use "EU".

- .AF, .AFRC: Africa
- .AS, .ASIA: Asia
- .AU, .AUST: Australia
- .EU, .EURO: Europe
- .NA, .NOAM: North America
- .OC, .OCEA: Oceania
- .SA, .SOAM: South America
- .CEAM   : Middle America
- .ANTR Antarctica (*)
- .AUNZ Australia/New Zealand (*)
- .CAFR Central Africa (*)

- .CARB Caribic (*)
- .EPAC Eastern Pacific (*)
- .INDI Indean Ocean incl. Indian subcontinent (*)
- .MDLT Mediterranean (*)
- .MDLE MiddleEast (e.g. Israel)
- .NAFR Northern Africa (*)
- .NPAC Northern Pacific (*)
- .SAFR Southern Africa (*)
- .SEAS South-East Asia (*)
- .SPAC Southern Pacific (*)
- .WPAC Western Pacific (*)

The marked (*) designators are inventions of TAPR organization, practically never used and are only listed to be complete.

The designator of the different countries is specified by ISO 3166. The designator is three letters long. For Europe exist the following designators:

Practically used:
- .AUT Austria
- .BEL Belgium
- .BGR Bulgaria
- .BIH Bosnia-Herzegowina
- .CHE Swiss
- .CZE Czechia
- .DEU Germany
- .DNK Denmark
- .ESP Spain
- .EST Estonia
- .FIN Finland
- .FRA France
- .GBR Great Britain
- .GIB Gibraltar
- .GRC Greece
- .HRV Croatia
- .HUN Hungary
- .IRL Irland
- .ITA Italy
- .LTU Lithuania
- .LUX Luxemburg
- .LVA Latvia
- .MKD Mazedonia
- .MLT Malta
- .NLD Netherlands
- .NOR Norway
- .POL Polonia
- .PRT Portugal
- .ROM Romania
- .RUS Russia
- .SVK Slovakia
- .SVN Slovenia
- .SWE Sweden
- .TUR Turkey
- .UKR Ukraine

- .YUG Yugoslavia

Short form (can be used for copy & paste to your *fwd.bcm*):
```
.AUT .BEL .BGR .BIH .CHE .CZE .DEU
.DNK .ESP .EST .FIN .FRA .GBR .GIB
.GRC .HRV .HUN .IRL .ITA .LTU .LUX
.LVA .MKD .MLT .NLD .NOR .POL .PRT
.ROM .RUS .SVK .SVN .SWE .TUR .UKR
.YUG
```

Additions country designators:
- .ALB Albania
- .AND Andorra
- .BLR Belarus
- .FRO Färöer Island
- .GRL Greenland
- .ISL Island
- .LIE Lichtenstein
- .MCO Monaco
- .MDA Moldawia
- .MSR Monserrat
- .SJM Svalbard/Jan Mayen Island
- .SMR San Marino
- .VAT Vatican

By the way, Svalbard are belongings of Norway in the north polar ocean...
;-)

Following designators are obsolet and should not be used any more:
- .SUN Soviet union
- .CSK Czechoslovakia
- .MAK and .MAC Macedonia got only .MKD
- .TCH Czechia got .CZE since 1996

The regional designators can be defined using up to four letters. The first letter is always a "#".

Regional designators in Austria:
- .#OE1 Wien
- .#OE2 Salzburg
- .#OE3 Niederösterreich
- .#OE4 Burgenland
- .#OE5 Oberösterreich
- .#OE6 Steiermark
- .#OE7 Tirol
- .#OE8 Kärnten
- .#OE9 Vorarlberg

Regional designators in Czechia:
- .#MOR Mähren
- .#BOH Böhmen

Regional designators in Germany:
- .#BAY BAYern
- .#BLN BerLiN
- .#BRB BRandenBurg
- .#BW Baden-Württemberg
- .#HB Hansestadt Bremen

- .#HES HESsen
- .#HH Hansestadt Hamburg
- .#MVP Mecklenburg-VorPommern
- .#NDS NieDerSachsen
- .#NRW NordRhein-Westfalen
- .#RPL Rheinland PfaLz
- .#SAA SAchsen-Anhalt
- .#SAR SAaRland
- .#SAX SACHen
- .#SLH SchLeswig-Holstein
- .#THR THüRingen

If you use designator you should always know, that the address is analysed from right to left (only exception: a correct callsign is known). This means, that adding a ".#OE7" (Region in Austria) in a german mailbox will result to nothing, because this region will be searched in an address like "OE7XKJ.#OE7.AUT.EU" from the right. ".EU" may not be omitted, because it defines the own area. ".AUT" is outside this area and so this must be added. Therefore the correct entry for Tirol in this example is ".#OE7.AUT". Additionally you can define for another forward partner ".AUT". OpenBCM is searching always for the longest compliance. This means that all usermail for Tirol are send to the partner which has ".#OE7.AUT" defined, and all other usermails for the rest of Austria are send to the partner which section has only ".AUT" defined.

One special case is the used address .EURO at the end of the hierarchical address. These cases must be defined individually (may be send .HUN.EURO to one partner and .ITA.EURO to another partner mailbox) because the analysis of the continent is not working here. OpenBCM is changing internally ".EURO" at the end of the hierarchical address into ".EU" – so you don't need to consider this special case. When forwarding such a mail, of course the original address is send.

1.2. The practical definition of forward entries

1.2.1. Usermails (using hierarchical address)
In the whole forward file following definitions must always exist:
- all continents must be defined, but without your own continent (e.g. all, but not .EU).
- all countries of own continent must be defined, but without your own country (e.g. all european countries but not .DEU).
- all regions in your own country must be defined, but without your own region (e.g. all german regions but not .#BAY).
- all mailboxes in the own region must be defined, but without the own mailbox (e.g. all mailboxes in region Bayern, but not the own one).

These entries must be splited to all forward partners. You can define same entries for more than one partner mailbox. If a mail have to be send to this target, the mail is send to that mailbox, which is reached first. For the next mailbox the mail is deleted in the forward queue.

Important: it's really not useful to add entries like "A* B* C* ...", because with this, also useless address like @TE0ST.NOWHERE.XYZ are forwarded which cause to problems in your partner mailboxes! So, take some time and create a clearly defined *fwd.bcm* for your mailbox!

1.2.2. Bulletin mails (no hierarchical address)

There exist different directors for bulletin mails (a director is that, what is used after the "@" in the SEND command). Most used are:

- WW: worldwide
- EU: spread only in Europe
- DL: only to the german speaking area (includes not only Germany!)
- OE: only to Austria
- CZ: only to Czechia
- THEBOX: Used for THEBOX mailbox systems
- AMSAT: Satellit data
- BAYCOM: all OpenBCM mailboxes (used for OpenBCM software distribution)
- $WP: Used for White-Page/WPROT information (Mybbs etc.)

Some mailboxes use also further directors (e.g. @ALL, @TOUS etc.). But in praxis this often means the same like @WW. So, why not using always @WW if everybody should use the mail? It's hard to understand why such a nonsense is made. When you use OpenBCM you can clear up with this masses of directors: simply add lines to your *convat.bcm* file like
ALL WW
ALLE WW
TOUS WW
TODOS WW
...and so on. When now a mail with a director like @ALL reaches your mailbox it will be forwarded like it has @WW. When forwarding such a mail, of course the original address is send. So you have to define only WW in your forward sections where you need it. This clears up your *fwd.bcm* enormous.

If you want only one/some board(s) to be forwarded to your partner mailbox, you can define simply the board name(s) to the section in *fwd.bcm*. For sure, it's possible to send bulletins to more than one mailbox.

1.2.3. All forward options in overview

In file *fwd.bcm* you can define additional options for each section of a partner mailbox. Following options are possible:

```
  -b<bytes>  maximum size of forward mails (e.g. > 10k)
  -d         (delayed) forward only at set times of crontab.bcm
  -e         send E/M files with 4 lines in 1 frame (e.g. DB0SAO)
  -f         send empty line before start forward (e.g. TCPIP/xNOS)
  -i         BoxBin mails are forwarded regardless of the capabilities of
             the receiving system (not useful in most cases)
  -k         no forward of autobin bulletins
  -l         no forward of autobin user mails
  -m         no forward of 7plus bulletins
  -n         no forward of 7plus user mails
  -o         entries are sorted by size (smallest at first)
  -p         suppress prompt after login (e.g. needed for DB0SAO)
  -r         send ONLY boards from fwd.bcm to forward partner
  -s         SID is send immediately of connected BBS
  -t         tracing active (if "fwdtrace 2" is set)
  -u         connection is closed immediately, without this parameter
forward
             is waiting for some time if new mails can be forwarded
```

Note: The option "-l" is only useful, if the forward partner is really not capable with such mails. This is may the case if the target mailbox uses an obsolete software system. The option "-b" is only useful if the forward partner can only handle ASCII data (from WA7MBL). Internally OpenBCM limits the size of one mail at the moment to 10 MBytes. Every option must be separated through spaces, if you use more than one, for a section.

1.2.4. Special criteria (only) for bulletins

Normally bulletins are forwarded because of their director (e.g. @DL or @WW). But it's also possible that only some special boards are forwarded or special boards never being forwarded.

1.2.4.1. Special boards should never be forwarded

For this behaviour you have to add each board, you never want to forward, with an asterix in front of it in file *fwd.bcm*. Note: the name, before using the *convert.bcm* function, is taken.

Example:
    *MEINUNG *HUMOR *E
...will never send mail from board MEINUNG, HUMOR and E.

1.2.4.2. Only special boards should be forwarded

For this behaviour you have to add in your *fwd.bcm* section the option "-R" and additionally the board(s) with an asterix in front of it. Only that mails are being forwarded, who's directors are also added. Note: the name, before using the *convert.bcm* function, is taken.

Example:
    -R *BAYBOX *SYSOP *F
...will only send mail from board BAYBOX, SYSOP and F.

1.2.5. Forward timeout

While being forwarded and data reception is longer idle than defined with parameter FWDTIMEOUT, the forward connection is being disconnected and an entry in file *trace/syslog_r.bcm* is being made. You should select the timeout value in dependence of the forward link speed. Sometime even a value of 30 minutes is too less! You can also use option "-U" to avoid the forward idle mode, but it's not recommended, because often new mails arrive and the new connection setup does more traffic than the held link.

1.2.6. Special forward options

For doing forward with some mailbox systems some special characteristics must be considered. This is mostly the case when doing forward with xNOS systems. All options are listed shortly in chapter "1.2.3. All forward options in overview". Here are some important options described again.

- Some xNOS system need to get a empty line after link has been setup, because those system detect with that, that it is a simple AX.25 and not a TCPIP connection. You can activate this feature with option "-F".

- The option "-T" causes the same as "FWDTRACE 2": the complete forward flow is being logged into a file *trace/t_<callsign>.bcm*. If you got a problem with connecting, this could be a big help.
- For forward partners, which can only handle a small amount of simultaneous connects, the feature to do each time a new mail forward connect after one new mail has arrived, can be switched of. If you add the option "-D" the forward connect is only made at the times, that are defined in file *crontab.bcm.* Note: the performance of a quick mail exchange is very poor in this case, and it's really not recommended to use this option, while not very important reasons exist for this.

1.3. Structure of a forward file

First here is an example of simple a *fwd.bcm* file:

```
;----------------------------------------------------------------
; fwd.bcm example file
;----------------------------------------------------------------
; Forward file of OE3XSR.#OE3.AUT.EU
;----------------------------------------------------------------
;       0         1         2
;       0123456789012345678901234567890123
;----------------------------------------------------------------
DB0WGS AAAAAAAAAAPAAAAAAAAAPAA DB0WGS-8
; BBS from own region
 OE3XBS
; Regions from .AUT
 .#OE2 .#OE5 .#OE8 .#CAR .#OE9 .#TIR .#OE7
; Europe
 .BEL .BGR .BIH .CHE .DEU .DNK
 .ESP .EST .FIN .FRA .GBR .GIB
 .GRC .HRV .IRL .ITA .LTU .LUX
 .LVA .MKD .MLT .NLD .NOR .PRT
 .ROM .RUS .SVK .SVN .SWE .TUR
 .UKR .YUG
; Continents
 .AF .AFRC .AS .AU .AUST .CEAM .CARB .MDLE .NA
 .NOAM .OC .OCEA .SA .SOAM
; Bulletin directors
 WW EU DL BAY OE
 BAYCOM AMSAT THEBOX
; White Page Infos for WPROT
 $WP
;----------------------------------------------------------------
OE1XAB - OE1XAB OE3XBR
 -T
 .#OE1 .#OE4 .#OE6
 .HUN
 DL OE OEOST
 BAYCOM AMSAT
;----------------------------------------------------------------
OE3XZR - OE3XZR-8
 -T
 OE3XZR
;----------------------------------------------------------------
OK0NKT - OE3XNR / OK0NKT-12
 .CZE .POL
 WW EU AMSAT OK THEBOX
 $WP
;----------------------------------------------------------------
; END
;----------------------------------------------------------------
```

The first line of a forward section defines the partner mailbox name (callsign without SSID), the forward timing (when do forward which mails) and the connection path to the forward partner. After that, you can add as many lines as you want to define the usermail and bulletin behaviour. All these additional lines must have one space as first character in a line.

If no special case is need, you can define the forward timing with "-".
This is equivalent with timing of "PAAAAAAAAAAAAAAAAAAAAAA" and is best for
most cases. All new received mails are immediately forwarded to the other
partner mailboxes. Alternative you can define the timetable with a 24
character long string. Each character defines if mails are being forward in
that hour. The first character symbolize the time from 0:00-0:59 o'clock,
the second for 1:00-1:59 o'clock and so on. Following characters can be
used:

- "A" (All): All mails (usermail and bulletins) are forwarded.
- "U" (User): Only usermail are forwarded.
- ".": Nothing is forwarded.
- "P" (Poll): All mails are forwarded (like A), and additionally at
  the time defined in *crontab.bcm* (normally each 30 minutes) a
  forward connect is being made to the forward partner, also if no
  mails are in the forward queue to send. This makes sense, if the
  partner mailbox has missconfigured the connect path and therefore
  can't send its mails to your BBS. It makes sense to do such a pool
  one time a day.

It's normally ok to add only "<target callsign> <node callsign>" for the
connect path. In this case a connect is setup to <target callsign> via
<node callsign>.

Example for a section in *fwd.bcm* (if a forward connection is setup, a
connect to DB0IGL-8 via DB0IRS is made):
```
DB0IGL - DB0IGL-8 DB0IRS
 <entry1> <entry2> ...
 [...]
```

In some cases it's needed to made a multi-stage setup. In this case, you
need to add between each stage a " / " in the connection path (take care,
that you have to add a blank in front and behind that "/"!). Note: If you
are using a flexnet node, a multi-stage link setup is not recommended and
not necessary!

Example for a multi-stage setup in *fwd.bcm*:
```
DB0WGS - DB0AAB / DB0HOB / DB0WGS-8 DB0WGS
 <entry1> <entry2> ...
 [...]
```

...this will lead in the following link setup when a forward connection is
being made:

- Link setup to DB0AAB via AX.25 interface of OpenBCM (internal
  use of L2, PC/Flexnet or linux kernel-AX.25)
- **C DB0HOB**
- Wait for "connected to"
- **C DB0WGS-8 DB0WGS**
- Wait for "connected to"
- Now doing the forward

The string between the slashes is send transparent after "C" (this is the
CONNECT command), an entry like
```
    OE7XKJ - OE7XAR 3 / AX25 OE7XKJ-4
```
is therefore also possible. In the above example first a connect to OE7XAR
on port 3 is made, then the string "C AX25 OE7XKJ-4" is send. The syntax of
connect path is also used for the user forward.

You can also use for multi-stage connects a "=" as first character. With
this, the string until the next " / " is send transparent and without
adding a "C" in front of it.

Example:
```
    F5ABC AAPAAAAAAAAAAAAAAAAAAAAAA OE3XSR / =XCON F5ABC 3 / =BBS
```

...will connect first OE3XSR. After that, the string "XCON F3ABC 3" is
send. If this connection is made, the string "BBS" is send. The answers
"connected" etc. must be noticed before the next connect command is send.
If an correct answer is not recognized, please send me a log to add this in
future releases of OpenBCM. Due to local languages the "connected to"
messages of systems vary extreme.

If an additional "=" exists, two commands are send transparent and without
a "C" in front of it and without waiting for an answer between. If you add
more "=" more commands are send.

Example:
    DB0AC AAPAAAAAAAAAAAAAAAAAAAAAA telnet:db0ab.dyndns.org:23 / =DB0MY =GEHEIM =C 8:DB0AC /
    =BBS
...will connect first via DB0AC via telnet DB0AB.DYNDNS.ORG using port 23.
As login string "DB0MY" is send. After that the string "GEHEIM" is send
without waiting for an answer and after that also the string "C 8:DB0AC" is
send without waiting for an answer. If connection is made with DB0AC (means
a "connected to DB0AC" was recognized), the string "BBS" is send.

After defined the first line of a forward section you can add as much
entries like you want which define, which mails are send to that target
(each following line must start with a blank). You can add mailbox
callsigns (e.g. "DB0IRS"), parts of mailbox callsigns (e.g. "OE*"),
directors (e.g. "DL") and hierarchical address designators. The last must
always start with a point in front of it, e.g. ".#BAY" or ".AUT", because
an entry like "AUT" would be interpreted as director (means @AUT). Further
on you have to worry about:
- If you want to exchange White-Page information, you have to add
  "$WP".
- If you have ambiguous entries the one with the longest accordance
  is being used. Example: OE7* and OE9* is send to one partner
  mailbox. OE* can be now added to another partner and will mean, all
  OE* without OE7* and OE9* is send to this partner. You should
  reduce the usage of such wildcards in *fwd.bcm* and indeed it's
  recommended to abandon the usage of wildcards, because it can make
  a forward configuration extremely confusing.

1.3.1. Additional notes for *fwd.bcm*
- If you want only receive from a partner but not send any mail, you
  have to edit only the callsign in the first line of a section. The
  timetable and the connect path isn't needed in this case.
- The syntax of capital or small letters is irrelevant.
- A ";" marked the rest of that line as a comment.
- Inside a forward section you can add spaces, linefeed and comments
  as much as you like. You have only to care that each additional
  line starts with a space.
- If a mail can't be forward because it's too long (when using option
  "-B" in *fwd.bcm*) a warning mail is generated for the sender
  callsign.
- Bulletins, which have already passed the own mailbox, are rejected.
- File *fwd.bcm* is initialized while the OpenBCM is starting. If it's
  changed while OpenBCM is running if can be re-initialized using the
  sysop command NEW. After initializing, a message is displayed which
  show a small statistic (how many forward partners etc.).
- You should check with command "p –sfn" if there still exists
  addresses which can't be reached by your mailbox
- Changing the file *fwd.bcm* via remote access:
  a) - Read out the current file with command RTEXT *fwd.bcm*

- Edit the file at your home PC
- Send the modified file back with command WTEXT *fwd.bcm*
  (Hint: make a backup of the original file before!)
- send the command NEW, to re-initialize the new forward file
  b) If option DF3VI_FWD_EDIT was used while compiling the mailbox
     software, you can use the internal editor. Note: you may loss edited
     comments in *fwd.bcm* when using the internal editor!
  c) Use external runutils of DF3VI if using OpenBCM for DOS

1.3.2. Section without forward

You can add a special forward section when you use the callsign "DUMMY" for
that section. The sense of this is to add here mailbox callsigns and
directors who should never be forwarded, but which will not added to file
trace/unknown.bcm or to a forward queue file.

You can add e.g. a section (for the mailbox system at DB0AAB) like:
[...]
DUMMY - DUMMY
 DB0ABC DB0XYZ
[...]

...this results in:
- all mail for DB0ABC and DB0XYZ stay without any comment in DB0AAB
  (in this case maybe useful, because both neighbour mailboxes are
  offline at the moment),
- "DUMMY" will never be shown in "STATUS FORWARD" overview,
- no forward queue file (e.g. *trace/u_dummy.bcm*) are created for a
  "DUMMY" section.

The timetable (in above example "-") and the connection callsign must be
added due to syntax reasons, so that the mails are really routed to
"DUMMY".

1.4. Initialization of file *fwd.bcm*

When initializing the file *fwd.bcm* each section for each forward partner is
read in. Each entry is cut of the parts which contain in the own mailbox
address.

Examples for the own mailbox DB0AAB.#BAY.DEU.EU:

a)
- DB0WGS.#BAY.DEU.EU
  .EU is contained in the own address, so it will be cut
- DB0WGS.#BAY.DEU
  .DEU is contained in the own address, so it will be cut
- DB0WGS.#BAY
  .#BAY is contained in the own address, so it will be cut
- DB0WGS
  remains, must be defined in *fwd.bcm*, because it's in the own region

b)
- K1XX.#BAY.NJ.USA.NA
  remains unmodified - .#BAY is namely a part of the own address, but
  because the analysis is started from right and doesn't match, it's
  unchanged

c)
- .#HES.DEU
  .DEU is cut, because it's contained in the own address
- .#HES
  remains

Now in the initialized data remain only entries, which lie outside the own area.

Besides, the callsign of the partner mailbox is added automatically to the section of the partner mailbox. This simplify the analysis and also, an alternative routing is possible if the callsign should be added to another section.

1.5. Analysis of forward addresses

During the analysis of a forward address the first step is to look at the first field (means the callsign of the mailbox). If this is found exactly in the forward config file, the rest of the hierarchical address is ignored. Because callsigns are clearly indicated, there is no imaginable case where this will lead into a wrong routing.

If the callsign itself is not found, the target forward address is cut (beginning from right to left) of that parts, that still are contained in the own mailbox address (see chapter "1.4. Initialization of file *fwd.bcm*").

After this the following procedure will be started: Each entry in *fwd.bcm* is compared with the end of the modified address. The longest compliance is searched. The condition for a match is a right-aligned exact compliance. Besides, the entry which is used for the search have to start with "." or is a valid mailbox callsign (because of address like DH5RAE.OE5XBL.AUT.EU).

If no possibility match, the search is extended for wildcards. The wildcards must match the callsign of a mailbox (not a hierarchical address). Wildcards are only working with usermail addresses not with bulletin directors.

If no a match is not found, the mail is added to the log file *trace/unknown.bcm* and will stay in your own mailbox. The log file *trace/unknown.bcm* will not be machine read and should be re-viewed from time to time by the sysop. OpenBCM will generate a mail to the sender of a mail, that his mail will stay in the mailbox due to a routing error. In former time, a runutil UNK exist to generate such mail, but this tool is now obsolete.

If a match is found, the mail will be added in all matching forward queue files. You will find the queue files in subdirectory *fwd*, for each partner mailbox exist a file *u_<callsign>.bcm* for usermail queue and *i_<callsign>.bcm* for the bulletin queue. There is also a file *w_<callsign>.bcm* for WPROT message queue.

In the files for usermail and bulletins the boardname and the filename of the mail is added. To identify the board the precise boardname suffices, the complete path is not needed. The second field defines the size of the mail and the optional third field defines a timestamp (in unix format) which defines the earliest forward time for that mail.

Example of the syntax of one entry from a forward queue file:
    YAESU/242FE73 <size> [<timestamp>]

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If the mail has been forward, the first character in the mail queue file is overwritten with a blank. If the whole file contains only lines which first characters is blank, the complete file will be deleted.

The lines can vary in length and each line is finished with CR+LF.

If an entry still exist in the queue file, but the mail itself was deleted in the meanwhile, that entry is ignored and will be deleted from the mail queue.

If a mail should be forced to be forwarded to a partner mailbox (ignoring *fwd.bcm*) you can use the mailbox command FORWARD.

Before sending a mail the forwarding is check due to plausibility. Following errors can appear and are logged in SYSLOG:

- fwds: loop frombox>tobox
  The mail has run to often through your own mailbox (Loop) and stays now in your mailbox. Bulletins can only run one time through your mailbox, usermail up to three times. You can use commands FORWARD and MYBBS to overwrite this mechanism. The reason for a loop in bulletin forward is often that the BID has been changed in the meanwhile. The reason for a loop in usermail forward is most times a wrong forward configuration between two mailbox systems (each system is sending the mail to the other). This message can appear more than one time, because it will be generated while sending (not instead of sending) the mail and will appear so for each partner mailbox where the mail has been tried to send to.
- fwds: too old frombox>tobox
  Happens only while forwarding bulletins which are older than the value defined with OLDESTFWD, the mail is too old and remains in your mailbox.
- fwds: size frombox>tobox
  The mailsize is bigger than the size defined by the "-B" option in *fwd.bcm*.

1.6. Forwarding of white page information

These information are exchanged using the W-Prot procedure of OE3DZW. If the neighbour mailbox can't handle this format (no "W" in SID), the WP format from F6FBB mailbox system is being used automatically.
The obsolete E/M procedure - formerly established by THEBOX - should not be used any more.

1.7. One-Letter boards

One-Letter boards can be only read/listed with sysop rights. Some one-letter boards have a special meaning:

Board	Software	Used for
B	DieBox, OpenBCM	Erased mails
C	DieBox	Erased mails via KILL
E	DieBox, OpenBCM	Remote erase information exchange (obsolete)
F	–	Internal sysop information distribution
M	DieBox, OpenBCM	MYBBS information exchange (obsolete)

P	Pocsag, OpenBCM	Used for POCSAG messages
R	-	DieBox software distribution
T	DP-Box, DieBox, OpenBCM	Used by TELL command
V	DP-Box	DP-Box software distribution
W	DP-Box, OpenBCM	WPROT information
X	DP-Box, WinGT	Forwardqueue
Z	-	Clipboard for mails

One-Letter boards can't sometimes not be used with the DIR command, because they are hidden by a DIR subcommand (e.g. "DIR A"=DIR ALTER, "DIR B"=DIR BOARDS, "DIR N"=DIR NEWS, etc.). These boards can be reached with the LIST command or if you change the board before with CD command and than use the DIR command without the boardname.

1.8. ACK messages

ACK messages are routed like usermails. The difference is, that
- only forwarded to partner mailboxes with an "A" in the SID.
- no R:-lines are added to such a received ACK message in forward.
- they are send with command "SA" in the forward.
- they are saved with internal flag "A".

The manual input of command "SA" at mailbox prompt is only possible, if you are logged in as sysop.

1.9. Starting forward

The forward connect to a partner mailbox is started if a new mail for that partner mailbox has been received and the partner mailbox could be reached at the last connect try or if the timetable in *crontab.bcm* defines a forward connect if the mailbox could last time not be reached. The sysop can also manually start a forward connect with "SF <callsign>" if needed. With "SF ALL" the forwarding for all partner mailboxes is started one by one.

After the connect has been established, first usermails are send, after that the bulletins and just before the end, the WPROT mails. WPROT mails are only forwarded if bulletins or usermail are in the forward queue, they will only send alone, if the forward was started by *crontab.bcm*.

To start the forwarding each half hour, you have to add a line in *crontab.bcm* like following:
```
[...]
0,30        *    *    *    *        forward
[...]
```

1.10. The autorouter

There is the possibility to use the autorouter function of OpenBCM. To use it, you have to make sure, that you mailbox software was compiled with the option _AUTOFWD in *config.h* of source code.

The Autorouter only tries to find a routing, if no valid entry in *fwd.bcm* was found for that target. So, this means, you can use the autorouter as an

addition for the normal configuration of *fwd.bcm*, entries in *fwd.bcm* always overwrite possible autorouter targets.

You can activate the autorouter by setting the parameter AUTOFWDTIME in file *init.bcm*. With this parameter you define the amount of days, how long an entry of received mails can be used for calculating a routing. Normally a value of 30 days is useful. If you set the value to 0, the autorouter is switched off.

To get an overview which routing are calculated by autorouter, you can use the command AFWDLIST. As a result of this command you get a list of all found autoroutings for your partner mailboxes. More informations are saved in file *afwd1.tmp* which can be found in subdirectory *temp* of your mailbox and which has following syntax:
    <partner callsign> <target mailbox+header> <shorted header> <age of info>

The autorouter gets the best possible path while calculating the amount of hops and the transmission duration between the target and your mailbox. One additional condition is, that at least 4 mails must be received over that path.

The command AFWDLIST creates also the file *afwd.bcm*, if AUTOFWDTIME is not set to 0. In this file you will find also the calculated additional routings. Because you don't want to enter this command each time manually you should add in your file *crontab.bcm* a line "afwdlist", so that this is executed automatically e.g. once a day (recommended value):
[...]
10   2   *   *   *   afwdlist
[...]

The forwarding of mail will work like following if autorouter is activated:
1.) *fwd.bcm*: as usual, only if no match found go on to 2.)
2.) *afwd.bcm*: this file was generated by autorouter
3.) *hadr4.bcm*: Database is searched (makes only sense for new entries, otherwise they still exist in *afwd.bcm*, but this method is so quick, that it can be used)

With command AUTOPATH [-a] <callsign> you can check, if a route for <callsign> is known by your mailbox.

1.11. Active routing

Since version 1.06 of OpenBCM the ACTIVE-ROUTING function is implemented. Don't confuse ACTIVE-ROUTING with the autorouter feature (see chapter "1.10. The autorouter"), which is analysing received mails and add forward routes as a result of that. ACTIVE-ROUTING takes a step forward: here the forward systems exchange automatically their information about their neighbours and reachable target mailboxes with delay times and target routing path. Only the current best path is being used for routing usermail to the target. If an OpenBCM system recognize that the neighbour can handle ACTIVE-ROUTING, usermails are forwarded to the known target via ACTIVE-ROUTING. Manually entries in *fwd.bcm* are overwritten for those targets.

1.12. IGATE in connect path

In the last 2 years a kind of internet backbone system war born for the ham radio packet network. This system can be connected with the callsign "IGATE" (=Internet GATEway). Some sysops with badly working HF equipment but with stable money and internet access began now to use IGATE also in the forwarding connect path. OpenBCM is now so designed, that a string

"IGATE" in connect path is only working, if the last connect try was
unsuccessful. With this behaviour, the forward will automatically try from
time to time the connect via the (slower) HF path without the sysop have to
change the path each day to changing conditions.

If in connect path of one partner mailbox in *fwd.bcm* the callsign "IGATE"
was added, it's ignored if
        - it's the first connect try since initializing of *fwd.bcm*.
        - to last connect to the partner mailbox was successful.
In praxis this results that the connect will be automatically tries from
time to time via the HF links (without IGATE). If this doesn't work the
next try is a connect via IGATE to help the forward to stay alive, if HF is
really working bad. It's clear that IGATE should be defined in *fwd.bcm* at
the right place (if IGATE should not be used, simply don't add it).

Example:
    HB9EAS AAAAAAAAAAAAAAAAAAAAAPA DB0FHN / IGATE / HB9EAS-8
or
    HB9EAS AAAAAAAAAAAAAAAAAAAAAPA HB9EAS-8 DB0FHN IGATE

If IGATE is not used for the forwarding (means HF is working), you will get
following output if you enter the command DIR PATH:
    HB9EAS AAAAAAAAAAAAAAAAAAAAAPA HB9EAS-8 DB0FHN IGATE
                 currently used: HB9EAS-8 DB0FHN

The function of IGATE is irrelevant for citizen band packet radio.