NAME

rx, rb, rz – XMODEM, YMODEM, ZMODEM (Batch) file receive

SYNOPSIS

rz [– **+abepqtuvy**]
rb [– **+abqtuvy**]
rx [**– abceqtuv**] *file*
gz *file ...*
[**–**][**v**]**rzCOMMAND**

DESCRIPTION

This program uses error correcting protocols to receive files over a dial-in serial port from a variety of programs running under PC-DOS, CP/M, Unix, and other operating systems. It is invoked from a shell prompt manually, or automatically as a result of an "sz file ..." command given to the calling program.

Rz is not intended be called from *cu(1),* or other communications programs. Unix flavors of Omen Technology's Professional-YAM communications software are available for dial-out applications. ®

Rz (Receive ZMODEM) receives files with the ZMODEM batch protocol. Pathnames are supplied by the sending program, and directories are made if necessary (and possible). Normally, the "rz" command is automatically issued by the calling ZMODEM program, but some defective ZMODEM implementations may require starting *rz* the old fashioned way. *Rz* does not support ZMODEM Crash Recovery, compression, and other ZMODEM features. Unix flavors of Professional-YAM may be linked to "rz" and used in place of this program to support these ZMODEM features.

Rb receives file(s) with YMODEM, accepting either standard 128 byte sectors or 1024 byte sectors (YAM sb **-k** option). The user should determine when the 1024 byte block length actually improves throughput without causing lost data or even system crashes.

If True YMODEM (Omen Technology trademark) file information (file length, etc.) is received, the file length controls the number of bytes written to the output dataset, and the modify time and file mode (iff non zero) are set accordingly.

If no True YMODEM file information is received, slashes in the pathname are changed to underscore, and any trailing period in the pathname is eliminated. This conversion is useful for files received from CP/M systems. With YMODEM, each file name is converted to lower case unless it contains one or more lower case letters.

Rx receives a single *file* with XMODEM or XMODEM-1k protocol. The user should determine when the 1024 byte block length actually improves throughput without causing problems. The user must supply the file name to both sending and receiving programs. Up to 1023 garbage characters may be added to the received file.

Gz is a shell script which calls *sz* to command Pro-YAM or ZCOMM to transmit the specified files. Pathnames used with *gz* must be escaped if they have special significance to the Unix shell.
EXAMPLE: gz "-a C:*.c D:*.h"

Rz may be invoked as **rzCOMMAND** (with an optional leading – as generated by login(1)). For each received file, *rz* will pipe the file to ''COMMAND filename'' where filename is the name of the transmitted file with the file contents as standard input.

Each file transfer is acknowledged when COMMAND exits with 0 status. A non zero exit status terminates transfers.

A typical use for this form is *rzrmail* which calls rmail(1) to post mail to the user specified by the transmitted file name. For example, sending the file "caf" from a PC-DOS system to *rzrmail* on a Unix system would result in the contents of the DOS file "caf" being mailed to user "caf".

On some Unix systems, the login directory must contain a link to COMMAND as login sets SHELL=rsh which disallows absolute pathnames. If invoked with a leading ''v'', *rz* will report progress to /tmp/rzlog. The following entry works for Unix SYS III/V:

rzrmail::5:1::/bin:/usr/local/rzrmail

If the SHELL environment variable includes *rsh* or *rksh* (restricted shell), *rz* will not accept absolute pathnames or references to a parent directory, will not modify an existing file, and removes any files received in error.

If **rz** is invoked with stdout and stderr to different datasets, Verbose is set to 2, causing frame by frame progress reports to stderr. This may be disabled with the **q** option.

The meanings of the available options are:

- **a** Convert files to Unix conventions by stripping carriage returns and all characters beginning with the first Control Z (CP/M end of file).
- **b** Binary (tell it like it is) file transfer override.
- **c** Request 16 bit CRC. XMODEM file transfers default to 8 bit checksum. YMODEM and ZMODEM normally use 16 bit CRC.
- **D** Output file data to /dev/null; for testing. (Unix only)
- **e** Force sender to escape all control characters; normally XON, XOFF, DLE, CR-@-CR, and Ctrl-X are escaped.
- **p** (ZMODEM) Protect: skip file if destination file exists.
- **q** Quiet suppresses verbosity.
- **t tim** Change timeout to *tim* tenths of seconds.
- **v** Verbose causes a list of file names to be appended to /tmp/rzlog . More v's generate more output.
- **y** Yes, clobber any existing files with the same name.

EXAMPLES

(Pro-YAM command)
<ALT-2>
Pro-YAM Command: *sz *.h *.c*
(This automatically invokes *rz* on the connected system.)

SEE ALSO

ZMODEM.DOC, YMODEM.DOC, Professional-YAM, crc(omen), sz(omen), usq(omen), undos(omen)

Compile time options required for various operating systems are described in the source file.

NOTES

ZMODEM's support of XOFF/XON flow control allows proper operation in many environments that do not support XMODEM uploads. Unfortunately, not all timesharing systems support input flow control. The TTY input buffering on some systems may not adequately buffer long blocks or streaming input at high speed. You should suspect this problem when you can't send data to the Unix system at high speeds using ZMODEM, but YMODEM-1k or XMODEM-1k, when YMODEM with 128 byte blocks works properly.

The DSZ or Pro-YAM **zmodem l** numeric parameter may be set to a value between 64 and 1024 to limit the burst length ("zmodem pl128"). Although this compromises ZMODEM's throughput, ZMODEM's superior reliability remains intact.

If a program that does not properly implement the specified file transfer protocol causes *rz* to "hang" the port after a failed transfer, either wait for *rz* to time out or keyboard a dozen Ctrl-X characters. Every reported instance of this problem has been corrected by using ZCOMM, Pro-YAM, DSZ, or other program with a correct implementation of the specified protocol.

Many programs claiming to support YMODEM only support XMODEM with 1k blocks, and they often don't get that quite right.

In the case of a few poorly designed microcomputers, sending serial data to a tty port at sustained high speeds has been known to cause lockups, system halts, kernel panics, and occasional antisocial behaviour. This problem is not unique to *rz;* CRT terminals with block mode transmission and line noise have the same effect. When experimenting with high speed input to a system, consider rebooting the system if the file transfers are not successful, especially if the personality of the system appears altered.

The Unix "ulimit" parameter must be set high enough to permit large file transfers to Unix.

32 bit CRC code courtesy Gary S. Brown. Directory creation code from John Gilmore's PD TAR program.

BUGS

Rz is not intended be called from *cu(1),* or other communications programs. Unix flavors of Omen Technology's Professional-YAM communications software are available for dial-out applications.

Rz does not support ZMODEM Crash Recovery and many other ZMODEM features. Unix flavors of Professional-YAM may be linked to "rz" to support these features.

Pathnames are restricted to 127 characters. In XMODEM single file mode, the pathname given on the command line is still processed as described above. The ASCII option´s CR/LF to NL translation merely deletes CR´s; undos(omen) performs a more intelligent translation.

VMS VERSION

The VMS version does not set the file time.

VMS C Standard I/O and RMS may interact to modify file contents unexpectedly.

The VMS version does not support invocation as **rzCOMMAND .** The current VMS version does not support XMODEM, XMODEM-1k, or YMODEM.

According to the VMS documentation, the buffered input routine used on the VMS version of *rz* introduces a delay of up to one second for each protocol transaction. This delay may be significant for very short files. Removing the "#define BUFREAD" line from rz.c will eliminate this delay at the expense of increased CPU utilization.

For high speed operation, try increasing the SYSGEN parameter TTY_TYPAHDSZ to 256.

The VMS version causes DCL to generate a random off the wall error message under some error conditions; this is a result of the incompatibility of the VMS "exit" function with the Unix/MSDOS standard.

ZMODEM CAPABILITIES

Rz supports incoming ZMODEM binary (-b), ASCII (-a), protect (-p), clobber (-y), and append (-+) requests. Other options sent by the sender are ignored. The default is protect (-p) and binary (-b).

The Unix versions support ZMODEM command execution.

FILES

rz.c, crctab.c, rbsb.c, zm.c, zmodem.h Unix source files.

rz.c, crctab.c, vrzsz.c, zm.c, zmodem.h, vmodem.h, vvmodem.c, VMS source files.

/tmp/rzlog stores debugging output generated with -vv option (rzlog on VMS).