

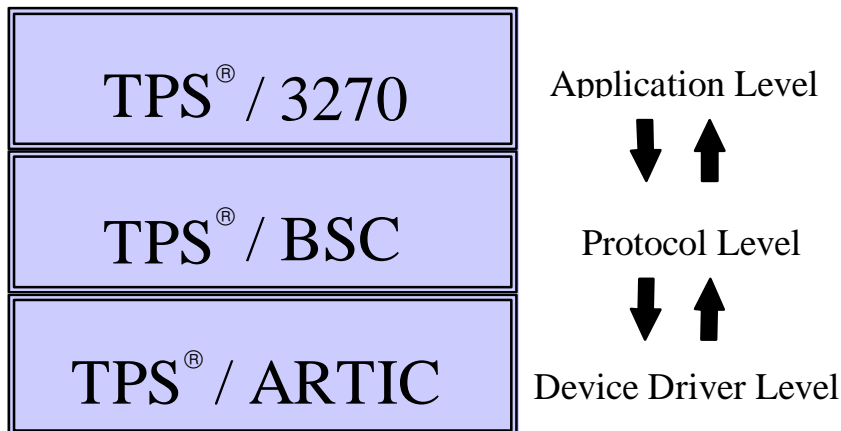
TPS®/3270 (BSC) Troubleshooting Quickstart Guide

About this Guide

Thank you for your interest in TPS®/3270 (BSC). To help you configure and/or troubleshoot any problems you might encounter, we have included this Troubleshooting Quickstart Guide. While most customers could completely configure/troubleshoot their connection with this Quickstart Guide please do not overlook the *TPS®/3270 User's Guide*. While this guide tries to cover as much information as possible on configuring and troubleshooting for the majority of our customers, it might be necessary to consult the *TPS®/3270 User's Guide* for additional information. This Troubleshooting Quickstart Guide is a supplemental document to the *TPS®/3270 User's Guide*.

What is 3270 (BSC)?

TPS®/3270 (BSC) allows a user to run application programs on a host or mainframe. It does this by emulating a mainframe terminal or printer. TPS®/3270 (BSC) runs at the application level and is dependent on the protocol level (BSC) to make the actual physical connection with the Host.



This being such, a problem with 3270 might be a problem with the protocol level instead. For this reason it is important that your connection with the Host is error free before troubleshooting any 3270 problem. Make sure the lower levels are working correctly.

Installing/Upgrading TPS® /3270 (BSC)

Before beginning installation:

1. Change to root user and root (/) directory.

2. If you are upgrading, make sure the TPS®/3270 (BSC) is not currently running.

**** AIX Installation ****

installp -acd /<path>/<filename> all (FTP Distribution)
installp -acd all (Diskette Distribution)

to apply (-a) and commit (-c) and device (-d) the software (or use smit).

(NOTE: If this an upgrade of an already existing copy the -F parameter may be needed)

Common Install Problems

To prevent problems when installing TPS®/3270 (BSC) here are certain situations to watch out for.

- **NOT** transferring the files from the ftp site in binary mode. Verify that the file size on the FTP server matches the file size on the target machine.
- Copying the contents of the diskette to the hard drive and then attempting to install the software will cause the install to fail. If the target machine does not have a floppy drive or you prefer to install directly from a file contact TPS®, for an FTP distribution.
- Usage errors (i.e., not using all the parameters required for install).
- When installing from the diskette, the diskette must be left in the machine for the complete installation. The disk writes back to itself certain information about the machine that it was installed on. Removing the diskette before the install is completed will cause the install to fail.

** Make sure that the install result was applied and successful before continuing. **

Security File

Each TPS® product contains a security file which was created and licensed for a specific machine id. Attempting to run on any machine other than the machine it is licensed to will cause an “Unauthorized” error message.

How to Configure 3270 (BSC)

Configuring 3270 requires several steps:

- configuring the Host side
- configuring the communication side of the connection (BSC)

- configuring TPS®/3270 (BSC)

This manual will only cover the configuring the TPS®/3270 (BSC) portion. For complete instructions on configuring the Host and communication side please refer to your documentation.

Creating a Configuration File for a Terminal or Printer

Using a configuration for a terminal is completely optional. However, a configuration file is required for any 3270 printer.

Why should I use a configuration file?

- Allows option to turn on logging
- Specify what happens to print jobs
- Can define macros and keyboard assignments
- Other options like screen color, size, etc.

You are not limited by the number of configuration files. Generally, people will use a separate configuration file for each terminal type (vt100, vt220, ibm3151, etc.) and for each printer. To edit or create a new configuration file, type:

e32conf

```
3270 Emulation Configuration Menu

Enter function code
1 = create new configuration file
2 = update general options
3 = update keyboard assignments
4 = update attribute assignments
5 = update printer options
6 = update macros

Configuration file name - /var/tps3270/data/e32conf.001

Enter = Perform Function          F3 = Exit
```

Once the program is loaded, you can either create a new configuration file or edit an already existing one. Move the cursor down to “Configuration file name” and type the full path and configuration file name.

Option:

1. Creates a new configuration file. First you must type the full path and filename under “Configuration file name”.
2. Update General options. See “General Options”.
3. Update Keyboard options. See “Keyboard Options”.
4. Update Attribute Assignments. See the *TPSâ /3270 User’s Guide* for listing/descriptions.
5. Update Printer Options. See “Printer Options”.
6. Update Macros. See “Macro Options”.

General Options

```
Update/Display of general 3270 Emulation options

Convert keyboard input to upper case (0=no, 1=yes) - 1
Maximum/Alternate screen rows
(24-43 or 0 for default of 43) - 000
Maximum/Alternate screen columns
(80-255 or 0 for default of 132) - 000
Create line trace file (0=no,1=short,2=long,3=fast) - 0
NLS file name -

Enter = Display      F6 = Update      F3 = Exit
```

Maximum/Alternate screen rows & Maximum/Alternate screen columns - Specifies the number of rows that a 3270 screen or printer may contain. If the configuration file is for a terminal you might need to change the terminal settings in UNIX to adequately display the correct number of rows and columns.

Create line trace file - This option will turn on logging. Log files will be kept in /var/tps3270/logs and be named the profile name followed by a “.log” . If you are trying to diagnose a problem, set this option to ‘2’. This will create a detailed log file. You will need to stop and restart the program using this configuration file in order for logging to start.

NLS file name - (National Language Support) If you are using any other language other than English or you want to use your own translation table, specify the name of the compiled NLS file here.

Keyboard Assignments

```
Define the keyboard keys which will be used for all of the key functions.
For each function, press the actual keyboard key which will be used. Use the
following keys for special functions:

space = skip to next key      S = Save and exit      P = Print
N = no key assigned          X = Exit with no save

F1      F1      F2      F2      F3      F3      F4      F4
F5      F5      F6      F6      F7      F7      F8      F8
F9      F9      F10     F10     F11     F11     F12     F12
F13     F13     F14     F14     F15     F15     F16     F16
F17     F17     F18     F18     F19     F19     F20     F20
F21     F21     F22     F22     F23     F23     F24     F24
PA1     F25     PA2     F26     PA3     F27     CLEAR   !
ENTER   New Line  ENTER   Action  RESET   `       TAB     Tab
BACKTAB Back Tab   HOME    Home    U ARROW Up Arrow D ARROW Down Arrow
R ARROW Right Arrow L ARROW Left Arrow U ARROW Up Arrow D ARROW Down Arrow
ERASE F { ERASE I } DELETE Delete NEWLINE \
DUP     F28     FLDMARK F29     PRINT  F30     TERM   ~
REFRESH F31     INDFILE F32     ATTN   F33     SUSPEND F34
CURSEL  F35     SYSREQ  F36     PREFIX none
```

For each 3270 function, the actual keyboard key to be used must be pressed to change the assignment. Make sure the configuration file is created using the terminal type on which it is used. A two-keystroke combination can be used to define keys. This is done by using the PREFIX key.

Troubleshooting:

Remember, not all keys will be available on each terminal type. You should refer to your terminfo book for instructions on how to update/modify UNIX terminfo. If you press a key and it beeps that means it is not defined in terminfo. If a strange escape sequence appears when a key is press that means that key is not defined correctly in terminfo. If you press a key and nothing happens then your terminal is not sending the key (escape sequence) to your UNIX box.

Printer Options

```
Update/Display of 3270 printer options

Enter printer file option          - 0
  1=Write to print file
  2=Append to end of print file
  3=Increment print file name, bracket change
  4=Increment print file name, session change

Printer file name                  - /var/tps3270/print/prntfile.001
Printer top margin in lines (00-99) - 00
Add form feed character (0=no, 1=top, 2=bottom, 3=both) - 0
AIX command to be performed at end of each print file:
  df
Enable multiple line writes with CR (0=no, 1=yes) - 0

Enter = Display      F6 = Update      F3 = Exit
```

Enter printer file options - This will determine how each print job is managed.

1. Write to print file - Creates a new file and sends print data to that file. File will be overwritten if it already exists.
2. Append to end of print file - Appends print data to end of file.
3. Increment print file name, bracket change - Creates a new file and sends data to that file. If the file exists it will be overwritten. That the end of a SNA bracket change, the file will be closed. The file will be named "Print file name" and the suffix .001 and incremented each time.
4. Increment print file name, session change - As same as option 3, except the file will be closed only at the end of a session (UNBIND).

Printer file name - This will be the name and path where the print file will be saved.

Printer top margin in lines - Allows a certain number of blank lines to be added at the top of each printed page. ** Make sure you have read and write access to this directory. **

Add form feed character - This option will add a form feed character to the beginning, end, or beginning and end of each print file.

Local system command to performed at end of each print file - At the end of each print file, you may specify a command to be executed. You can use this to send the data to a printer or pipe the data into a script. You can use multiple commands by using the “;” character between statements. The “#” can also be used to represent the current print file.

Creating a Pool File for Printers and Terminals

Using a pool file for a terminal and/or printers is completely optional. However, some customers find a pool file convenient and less administration work.

Why should I use a pool file?

- Allows you to type in a pool name rather than assigning each user an individual LU. Taking the first available out of the pool.
- Split LUs into pools allowing different groups access to a set number of LUs. Because you can be limited by the amount of LUs available to you. Splitting the LUs can ensure a set number of LUs will be available for another group even when one group is full.

To edit or create a new pool file, type:

e32pool

```
3270 Emulation LU pooling configuration and control menu

Enter function code ----- |
1 = Start LU pooling
2 = Stop LU pooling
3 = Display LU pooling status
4 = Initialize/update LU pooling file from SNA files
5 = Update/display LU pooling configuration file

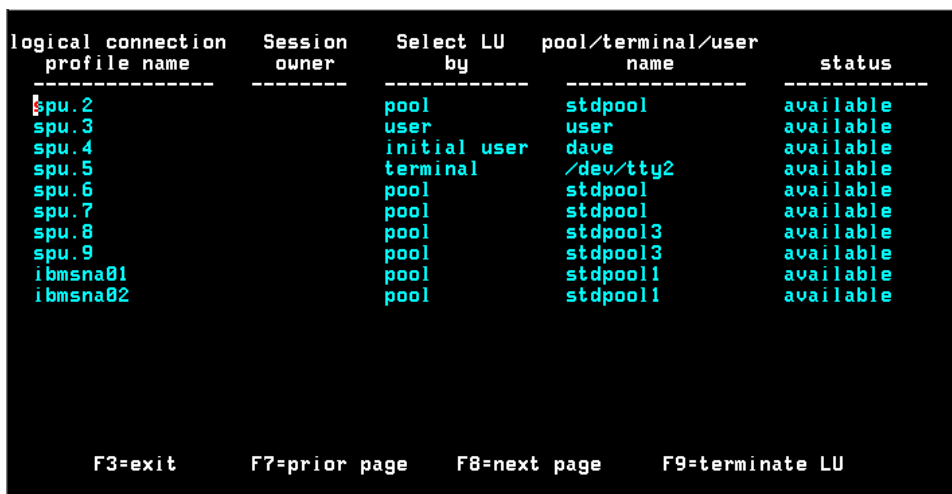
LOGNAME=jas LOGIN=jas NAME=root TTY=/dev/pts/3

Enter = Perform Function          F3 = Exit
```

Option:

1. Start LU pooling. If you already have a pool file defined, this will start LU pooling.
2. Stop LU pooling. This will stop the LU pool. You can only stop pooling when there is no LUs currently in use. You can terminate an LU from the “Display LU pooling status”.
3. Display LU pooling status. See “LU pooling status”.
4. Initialize/update LU pooling file from SNA files. Not used for 3270 (BSC)
5. Update/display LU pooling configuration file . See “Update/display LU pooling configuration file”. Allows you to manual change the pooling file.

LU pooling status



```
logical connection  Session  Select LU  pool/terminal/user
profile name       owner    by         name         status
-----
spu.2              pool     pool       stdpool      available
spu.3              user     user       user         available
spu.4              initial  initial    user         available
spu.5              terminal /dev/tty2  /dev/tty2    available
spu.6              pool     pool       stdpool      available
spu.7              pool     pool       stdpool      available
spu.8              pool     pool       stdpool3     available
spu.9              pool     pool       stdpool3     available
ibmsna01          pool     pool       stdpool1     available
ibmsna02          pool     pool       stdpool1     available

F3=exit    F7=prior page  F8=next page  F9=terminate LU
```

This screen will show the status of each LU in the pooling file. You can terminate an individual LU from this screen. Terminating the LU will close the session the user has with the Host.

Update/Display LU pooling configuration file

```

logical connection      LU type code      pool/terminal/user
profile name            (blank,1-4)      name
-----
spu.2                   1                 stdpool
spu.3                   2                 user
spu.4                   3                 dave
spu.5                   4                 /dev/tty2
spu.6                   1                 stdpool
spu.7                   1                 stdpool
spu.8                   1                 stdpool3
spu.9                   1                 stdpool3
ibmsna01                1                 stdpool1
ibmsna02                1                 stdpool1

LU type code: blank=by profile name, 1=pool, 2=user, 3=initial user, 4=terminal
F3=exit F6=update F7=prior page F8=next page F9=add entry F10=delete entry

```

This screen will display everything in your pooling configuration file. This pool text file can be found in /var/tps3270/data called e32ptab. Each name entered in the logical connection profile name must match an existing connection. LUs can be of type (1) pool (2) a specific user (3) a specific initial user, su (or equivalent) will not work (4) terminal (a particular tty).

Batch/Script mode

Some e32pool functions can be run from a script or command prompt. To run LU pooling from a command line:

e32pool function _code

function_code is one of the following:

- 0 Display user and terminal information
- 1 Start LU pooling
- 2 Stop LU pooling
- 3 Reset a specific LU (LU name must be specified)
- 4 Reset all LUs
- 5 Display LU pooling status

3270 (BSC) Commands:

Since there are numerous flavors of TPS®/3270 there is also numerous commands to start 3270 (BSC) depending on which product you are using. Because of this reason, use the proper command to run based on your product:

To start a 3270 terminal: **e32b** <LU or pool name> <config file> <nls_file> <logging>

To start a 3270 printer: **e32prt** <LU or pool name> <config file> <nls_file> <logging>

LU or pool name - the LU or pool name wanted to start the connection.

config file(optional parameter) - Used to define macros, keyboard assignments, printer options.

nls_file(optional parameter) - If you are using any other language other than English or you want to use your own translation table, specify the name of the compiled NLS file here.

logging(optional parameter) - This option will turn on logging. Log files will be kept in /var/tps3270/logs and be named the profile name followed by a . then the LU number.

To edit/create a configuration file:

e32conf

To convert your configuration file into ASCII:

e32txt <text_file> <config_file>

To convert your ASCII text file to binary:

e32bin <config_file> <text_file>

To start/stop pooling for the menu:

e32pool <function_code>

For a complete explanation of each function code, look under 'Batch/Script mode' in 'Creating a pool file for printers and terminals'. *function_code* is not required to start e32pool.

To use a translation table or another language other than the default (English):

e32xnls

Turning On and Using Logging:

TPS®/3270 (BSC) provides log file options which can be activated from the 3270 configuration file or the command line. To turn on logging from the command line:

TPS/BSC	terminals	e32b <LU or pool name> <config file> <nls file> L
TPS/BSC	printers	e32prtb <LU or pool name> <config file> <nls file> L

Logging can also be turned on in the configuration file. Start the *e32conf* program. ****Make sure you specify the right configuration file at the bottom.**** Select 'Update general options'. Set 'Create line trace file' to 'LONG'. Update the configuration file to save the changes. You will need to stop and restart the program using this configuration file in order for logging to start.

The log file will be kept in */var/tps3270/logs* and be named the profile name followed by a ".log".

Common Problems:

When diagnosing a TPS®/3270 (BSC) it is sometimes required to turn on logging. Errors will be noted in the log file. Erno values are OS generated errors. Return codes are specific values given from within the TPS® software, they are TPS® generated errors. Since troubleshooting a 3270 problem can be tricky, please email TPS® Technical Support the log file and a description of your problem. For a full description of all errno and return code values please refer to your *TPS® /3270 User's Guide*.

Problem: Data is only printing on a x columns or x rows. Screen is only displaying x columns to x rows.

Solution: Using a configuration file, make sure under 'General options' the rows and columns are assigned to your liking. It might not be possible to overwrite this setting if the Host is setting the output. Remember stty settings should be changed on the OS level to allow the extended screen size.

Problem: I'm trying to print screen or use *e32prt* but it's either not printing or I'm getting an error message trying to print.

Solution: Load your configuration file, under Printer Options make sure you're specifying a printer file name (that the directory exists and it has correct permissions). Also check your 'Local system command to be performed at the end of each print file:' this has to be a proven AIX correct command. Make sure you can type this at the command prompt without getting an error message.

Problem: My x key does not work from within the TPS/3270 application.

Solution: First, make sure that it is defined correctly in the configuration file. Make sure that you can press the key from within keyboard assignments and actually get that key back. Remember there are some limitations of certain terminal types (Ex: VT100 can only support 6 Function keys). If you press a key and nothing is displayed then the terminal is not sending the key to the UNIX box. Any keys that return escape characters are not defined correctly in terminfo. Refer to AIX for defining terminfo keys.

Problem: I am unable to get a HOST connection.

Solution: This is probably because of protocol problems (BSC). Make sure that the line is active for BSC. The e32bscd program should be running (ps -deaf | grep e32bscd). If it is not, logging should be turned on at the BSC layer to determine the problem.

Common Questions:

Can TPS®/3270 (BSC) be started from a script?

Yes. However, when starting to troubleshoot any problem, to eliminate as many possible causes, start 3720 from the command line instead of the script.

How do I start/stop pooling from a script?

e32pool 1 (starts pooling)
e32pool 2 (stops pooling)

How do I start/stop logging? The /var file system is filling up what's happening?

To stop logging: Start the *e32conf* program. ****Make sure you specify the right configuration file at the bottom.**** Select 'Update general options'. Set 'Create line trace file' to 'NO'. Update the configuration file to save the changes. You will need to stop and restart the program using this configuration file in order for logging to start.

To start logging: Start the *e32conf* program. ****Make sure you specify the right configuration file at the bottom.**** Select 'Update general options'. Set 'Create line trace file' to 'LONG'. Update the configuration file to save the changes. You will need to stop and restart the program using this configuration file in order for logging to start.

I am upgrading the OS, do I need to upgrade?

For the most part, the only software that we sell that is OS dependent is device drivers (ARTIC, ARTIC960, Portmaster, etc.) however, it is always a good idea to keep your software current. Customers that continue maintenance can request upgrades at no additional cost and receive continual technical support. Be safe, purchase annual maintenance.

What version of TPS®/3270 am I using?

Run *e32b -ver*, this will display the serial number, machine ID it is registered to, and the software version.

When I try to start any TPS®/3270 (BSC) program I get a message about it “not found”

Go into `/usr/lpp/tps3270b/bin` and link every file to `/usr/bin`. Make sure that everything in `/usr/lpp/tps3270b/lib` is linked to `/usr/lib`.

I am going to install several TPS® products. Do I need to install them in any order?

There is no specific order you need to install the products in. Just make sure you install all the software packages before configuring them.

Contacting TPS® Technical Support:

Should it become necessary to contact us, the best way is to submit an email to us with a log file attachment. This allows us time to look over the problem and determine what is happening in the log. The email should be sent to support@tps.com and contain the following information:

1. The 3270 log file created by turning on logging
2. A full description of the problem and if this was working before.
3. Which software you are using and the output of the following command:
e32b -ver
4. Any changes that have taken place recently (such as OS upgrade, replacing the communication card, changing how you connect to your host)
5. Any kind of software that you may be using in conjunction with ours.
6. If this is a screen problem, list the some text on the screen so we know what to look for in the logs.

Appendix A: Return codes

TPS®/3270 message numbers:

01	LU link went down
02	LU open not done
03	SSCP-LU session not active
04	Open error on LU connection
05	Close error on LU connection
06	Read error on LU connection
07	Write error on LU connection
08	Open error on log file
09	Close error on log file
10	Allocate error on SSCP-LU session
11	Deallocate error on SSCP-LU session
12	Allocate error on LU-LU session
13	Get status error on LU connection
14	Invalid default screen size on bind
15	Invalid alternate screen size on bind
16	Invalid lu type on bind
17	Open error on configuration file
18	Read error on configuration file
19	Write error on configuration file
20	Invalid configuration file header
21	Invalid configuration file name
22	Open error on print file
23	Write error on print file
24	Close error on print file
25	Invalid printer file name
26	Maximum select handle exceeded
27	Select error
28	Message queue allocate error
29	Message queue get error
30	Message queue send error
31	Message queue delete error
32	Fork keyboard process error
33	Shared memory allocate error
34	Shared memory attach error
35	Shared memory detach error
36	Shared memory remove error
37	Error establishing session
38	Error executing printer spool cmd
39	Semaphore allocate error
40	Semaphore control error
41	Semaphore operation error
42	Session ended by terminate key
43	Open error on NLS file
44	Read error on NLS file
45	Invalid NLS file
46	Ftok error

47 Error getting shared memory
48 Error allocating memory
49 Error getting user information
50 No connection profile name was entered
51 LU pooling is not active
52 The LU is already in use
53 No matches were found in LU pool list
54 Entry not authorized for current user Id
55 Entry not authorized for this terminal
56 No room available for inserts
57 LU pooling table overflow
58 Multiple LU pool entries apply
59 LU session ended
60 Beginning of list
61 End of list
62 Invalid entry selected
63 Invalid key entered
64 E32STRT already executed
65 E32ACT already executed
66 Invalid short name
67 Short name already used
68 Session limit reached
69 LU pooling version mismatch
70 Waiting for host connection
71 Open error on input file
72 Read error on input file
73 Invalid input data format
74 Error locating DBCS table
75 Open error on remote connection
76 Close error on remote connection
77 Read error on remote connection
78 Write error on remote connection
79 Sequence number error on remote connection
80 Invalid host name or port number
81 Invalid server name
82 Invalid terminal type
83 Connection ended
84 Maximum buffer length exceeded
85 Invalid LU name
86 Invalid associated LU name
87 Unknown LU name
88 LU name incompatible with LU type
89 Unsupported LU name or terminal type
90 Printers are not supported
91 Invalid parameter

AIX return codes (errno values):

1	Not super-user
2	No such file or directory
3	No such process
4	interrupted system call
5	I/O error
6	No such device or address
7	Arg list too long
8	Exec format error
9	Bad file number
10	No children
11	Resources not available
12	Not enough core
13	Permission denied
14	Bad address
15	Block device required
16	Mount device busy
17	File exists
18	Cross-device link
19	No such device
20	Not a directory
21	Is a directory
22	Invalid argument
23	File table overflow
24	Too many open files
25	Not a typewriter
26	Text file busy
27	File too large
28	No space left on device
29	Illegal seek
30	Read only file system
31	Too many links
32	Broken pipe
33	Math arg out of domain of func
34	Math result not representable
35	No message of desired type
36	Identifier removed
37	Channel number out of range
38	Level 2 not synchronized
39	Level 3 halted
40	Level 3 reset
41	Link number out of range
42	Protocol driver not attached
43	No CSI structure available
44	Level 2 halted
45	Record locking deadlock
46	Device not ready
47	Write-protected media
48	Unformatted media
49	No locks
50	no connection
51	connection has gone down
52	no filesystem

53 requests blocked
54 Operation would block
55 Operation now in progress
56 Operation already in progress
57 Socket operation on non-socket
58 Destination address required
59 Message too long
60 Protocol wrong type for socket
61 Protocol not available
62 Protocol not supported
63 Socket type not supported
64 Operation not supported on socket
65 Protocol family not supported
66 Address family not supported by protocol family
67 Address already in use
68 Can't assign requested address
69 Network is down
70 Network is unreachable
71 Network dropped connection on reset
72 Software caused connection abort
73 Connection reset by peer
74 No buffer space available
75 Socket is already connected
76 Socket is not connected
77 Can't send after socket shutdown
78 Connection timed out
79 Connection refused
80 Host is down
81 No route to host
85 Too many levels of symbolic links
86 File name too long
87 Directory not empty
88 Disc quota exceeded
93 Too many levels of remote in path