

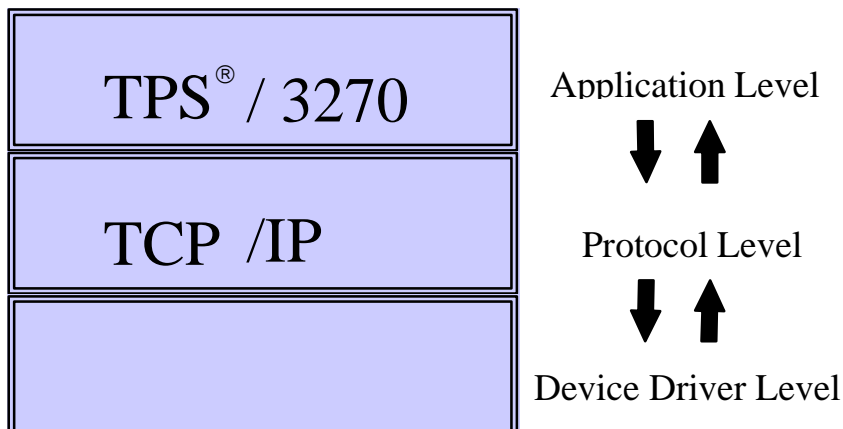
TPS[®]/3270 (SNA) Troubleshooting Quickstart Guide

•About this Guide

Thank you for your interest in TPS[®]/3270 (SNA). 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 (SNA)?

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



This being such, a problem with 3270 might be a problem with the protocol (SNA) 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[®]/TN3270 Client

Before beginning installation:

1. Change to root user and root (/) directory.
2. If you are upgrading, make sure the TPS[®]/3270 is not currently running.

**** AIX Installation ****

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

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

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

**** HP-UNIX Installation ****

`swinstall -s /<path>/<filename>` (FTP Distribution)

(NOTE: The FULL PATH name of the file is needed.)

**** SUN Installation ****

`pkgadd -d <filename> all` (FTP Distribution)

(NOTE: Answer 'Y' to all prompts during the installation procedure.)

**** SCO UnixWare 7 ****

`uncompress tpssna.pkg.Z`
`cat tpssna.pkg | pkgadd -d - tpssna` (FTP Distribution)

**** SCO OpenServer 5 ****

`uncompress tps3270c.pkg.Z`
`pkgadd -d ...full path.../tps3270c.pkg tps3270c` (FTP Distribution)

**** LINUX ****

`installp_<PRODUCT NAME> <filename>` (FTP Distribution)

(NOTE: Make sure the installp and the binary (tar) file is in the same directory.)

•Common Install Problems

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

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- **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.
- Usage errors (i.e., not using all the parameters required for install).

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

•Security File

Each TPS[®] product contains a security file that 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 TPS[®]/3270 (SNA)

Configuring TPS[®]/3270 (SNA) requires several steps:

- Configuring the Host side
- Configuring the communication side of the connection (SNA, TCP/IP, BSC)
- Configuring TPS[®]/3270

This manual will only cover the configuring the TPS[®]/3270 (SNA) 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.

The number of configuration files does not limit you. 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.

Options:

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 *TPS®/3270 User's Guide* for listing/descriptions.
5. Update Printer Options. See “Printer Options.”
6. Update Macros. See “Macro Options.”
7. Update Extended Options. See the *TPS®/3270 User's Guide* for listing/descriptions.

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 "." then the PID number. 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  '
BACKTAB Back Tab  HOME  Home    U ARROW Up Arrow  D ARROW Down Arrow
R ARROW Right Arrow L ARROW Left Arrow L ARROW Backspace  NEWLINE \
ERASE F {  ERASE I }  DELETE Delete  INSERT Insert
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).
5. Increment print file name, LU1=chain, LU3=bracket - Same as option 3, except LU1 print files will be split at the end of a SNA chain.

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
```

Options:

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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 are 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. Use this option to export IBM SNA connections only.
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 profile name	Session owner	Select LU by	pool/terminal/user name	status
spu.2		pool	stdpool	available
spu.3		user	user	available
spu.4		initial user	dave	available
spu.5		terminal	/dev/tty2	available
spu.6		pool	stdpool	available
spu.7		pool	stdpool	available
spu.8		pool	stdpool3	available
spu.9		pool	stdpool3	available
ibmsna01		pool	stdpool1	available
ibmsna02		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 profile name	LU type code (blank, 1-4)	pool/terminal/user 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__
```

•TN3270 Client Commands:

Since there are numerous flavors of TPS[®]/3270 there is also numerous commands to start 3270 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:

To start a 3270 terminal:

```
e32c <LU or pool name> <config file> <nls_file> <logging>
```

To start a 3270 printer:

```
e32prtc <LU or pool name> <config file> <nls_file> <logging>
```

where:

c - is the one- or two character identifier for your type of TPS[®]/3270.

e32s_TPS[®]/SNA version__e32_IBM SNA or CommServer version__
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.

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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 from 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 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/SNA _terminals_e32s <LU or pool name> <config file> <nls
file> L__TPS/SNA_printers_e32prts <LU or pool name> <config
file> <nls file> L__IBM SNA_terminals_e32 <LU or pool name>
<config file> <nls file> L__IBM SNA_printers_e32prt <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 the '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 “.” then the LU number.

•Common Problems:

When diagnosing TPS[®]/3270 it is sometimes required to turn on logging. Errors will be noted in the log file or the command line. `Errno` 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[®]/SNA 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 am trying to print screen or use `e32prt` but it is either not printing or I am getting an error message trying to print.

Solution:

Load your configuration file; under Printer Options make sure you are 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 (SNA, BSC, Telnet). Make sure that the line is active for SNA or you are able to ping the IP Address of the HOST. For SNA be sure the `linestatus` (TPS[®]/SNA type `snapstat -1`) is inactive.

•Common Questions:

Can TPS[®]/3270 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 is 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, 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 `e32 -ver (IBM/SNA)` or `e32s -ver (TPS®/SNA)`, this will display the serial number, machine ID it is registered to, and the software version.

When I try to start any TPS[®]/3270 program I get a message about it “not found.”

Go into `/usr/lpp/tps3270*/bin` and link every file to `/usr/bin`. Make sure that everything in `/usr/lpp/tps3270*/lib` is linked to `/usr/lib` (* t for TPS[®]/SNA, e for IBM SNA)

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:
`e32 -ver (IBM/SNA)` or `e32s -ver (TPS®/SNA)`
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[®]/TN3270 Client message numbers:

01	LU link went down
02	LU open not done

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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