

TPS[®]/SNA Troubleshooting Quickstart Guide

About this Guide

Thank you for your interest in TPS[®]/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[®]/SNA 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[®]/SNA User's Guide* for additional information. This Troubleshooting Quickstart Guide is a supplemental document to the *TPS[®]/SNA User's Guide*.

What is SNA?

Systems Network Architecture (SNA) is used to manage the communication between two computer systems over a physical link. SNA is a synchronous protocol allowing connections through Ethernet, token, ring, X.25, SDLC, DLSw. Generally, this type of communication is between a mainframe (primary PU) and a downstream UNIX machine (secondary PU). While the entire connection to the Host is considered the Physical Unit (PU), several applications can run on this PU on separate Logic Units (LU). These LUs can be considered separate communication strands within the PU. Each PU can have up to a maximum of 254 LUs, which is configured on the Host. The Host will configure these LUs by type (LU type 0, 1, 2, 3, 6.2) allowing certain data to be transmitted on them.

The SNA model has several layers to it. While the standard OSI model has seven layers to it, for our purposes we will focus on only three parts. These key parts are the application, protocol layer, and the device driver layer.

TPS[®] / 3270

TPS[®] / SNA

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It is important to note the relationship between each of the layers. In order for each layer to work properly, it relies on the layer directly below it. If you are trying to diagnose a problem, it is sometimes necessary to start troubleshooting at the lowest level and work your way up.

Installing/Upgrading TPS[®]/SNA

Before beginning installation:

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

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**** 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[®]/SNA 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.

- 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 is 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.

Configuring TPS[®]/SNA

1. Certain information is required from your Host prior to installation. This list can be found in Appendix A, and depends on the type of physical connection you are making (SDLC, Ethernet, token ring, DLSw, X.25).
2. Next you will need a configuration file. In the `/usr/lpp/tpssna/conf` (for AIX) or `/opt/tpssna/conf` (for HP, Sun, Linux, SCO) directory there are several sample configurations for the different types of connections that can be made to the host. Copy the appropriate configuration file into `/var/tpssna/conf`. This is where you will make changes to your configuration file.
3. Now it is time to edit this configuration file. Using Appendix B, as a guide, *vi* this file and make the necessary changes. Replace the sample configuration values (dummy values) with the ones given to you by your Host.

A complete description of all options and their meanings can be found in your TPS[®]/SNA User's Guide and at the top of each sample configuration file.

SNA Commands

After SNA has been installed and configured it is time to start the connection with the host. From the command line, type this command to start SNA:

```
snastart <config filename>
```

After which type this command and hit enter:

```
snapstat -l
```

The following is an example of the output of `snapstat -l`:

```
PU=spu, status=active, type=SPU  
LU 2, notify=yes, LU=active  
LU 3-5, notify=yes, LU=disabled
```

This command returns the status of the PU and LU. If the PU status is not equal to 'active', then logging should be turned on to diagnose the problem. Here are some examples of what may be shown after giving the `snapstat -l` command.

opening link:	SNA is waiting for the physical line to become active and for the XID to finish.
line opened:	The physical link is active but the ACTPU has not yet been received.
active:	The link (PU) is active. The physical link is active and the ACTPU command has been processed successfully.
end requested:	The <i>snastop</i> was just issued or the host system just requested that the link (PU) be ended.
ending:	The link (PU) termination process has started.
ended:	The SNA link (PU) and LU connection has ended.
inactive:	The link (PU) is not currently active.
retry wait:	After waiting for the number of seconds specified in the LINERETRY option of the configuration file, an attempt will be made to restart the link (PU).
terminating:	The physical link has been closed. The link (PU) will not be restarted.
passthru wait:	This status will only be displayed for the links that have been configured in pass thru mode.
line error:	There has been an error in accessing the physical line. The link (PU) will have to be stopped.

Using the `-l` option with the *snapstat* command will also display the LU status for each link (PU). The following are the various states that a defined LU will be displayed.

active:	The LU is currently in use by an application program, such as RJE or 3270 emulation.
disabled:	The LU is available but not currently in use by an application. (You can start an application to use this LU.)
inactive:	The LU is not available for use. Either no ACTLU was received for

the LU or the ACTLU was rejected.

To stop SNA:

```
snastop <config filename> (an Individual Link)
```

This command will stop an individual PU. If you have multiple PUs you can type `snastop -x` to stop all links.

Should you need to turn on logging, you will need to format the log file into a readable format. To format the log file go into `/var/tpssna/logs` and type:

```
pufmt -x <config filename> > <new file name>
```

This will convert the log file from binary format into a readable text file.

Turning on Logging:

TPS[®]/SNA provides logging options which can be activated from the SNA configuration file, located in `/var/tpssna/conf`. To turn on logging, edit your configuration file and either add a line or uncomment the line that says 'LOG=LONG'. SNA will need to be restarted for logging to take effect. Two log files can be created in the `/var/tpssna/logs`. These logs files can grow very fast so try to recreate the problem as quickly as possible. One log is for the SNA and the second log is for the DLC layer. While the **DLC log** is in text format and appended to each time, the **SNA log** is created in binary format and overwritten each time. The SNA log must be converted using the following command:

```
pufmt -x <config file> > <new file name>
```

Once you have determined the problem, turn off logging by commenting (#) the line 'LOG=LONG'. Logging records all SNA traffic on the line and can take up a lot of system resources. Remember to restart SNA in order for the change to take place.

Looking at the Log:

Now that a log file has been created it is time to pinpoint the cause to the problem. While there is a lot of information recorded in the log file, specifically you want to look for two things. Anywhere in the log that it says:

```
rc = <number>  
errno = <number>
```

There are two kinds of errors:

- 1) Errno (errno=) values are OS generated errors defined by the OS.

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2) Return codes (rc=) are specific values from within the TPS[®]/SNA software. These are TPS[®]/SNA generated errors and not necessarily always bad.

A complete listing of all `errno`s and return codes can be found in Appendix C.

The following are the most common `errno` values that occur.

errno = 2 No such file or directory. This error is usually a result of a device not being defined and/or available, calling the wrong port, or because the DLC layer not being installed. Go into the `/dev` directory to verify that the correct files are there.

This is by far the most common error encountered in the log file. A couple of things you should check:

1. (AIX ONLY) Make sure the `dlc` driver is installed on the system. Depending on your `LINETYPE` there should be a `dlc*` file in `/dev`. Find your `LINETYPE` and make sure your file is installed:

<u>LINETYPE</u> =	<u>Filename</u>	<u>If Missing Install</u>	<u>After Install Run</u>
SDLC	<code>dlcsdlc</code>	<code>bosext2.dlcsdlc.obj</code>	<code>mkdev -c dlc -s dlc -t sdlc</code>
TOKEN	<code>dlctoken</code>	<code>bosext2.dlctoken.obj</code>	<code>mkdev -c dlc -s dlc -t 'tokenring'</code>
ETHER	<code>dlcether</code>	<code>bosext2.dlcether.obj</code>	<code>mkdev -c dlc -s dlc -t 'ethernet'</code>
8023	<code>dlc8023</code>	<code>bosext2.dlc8023.obj</code>	<code>mkdev -c dlc -s dlc -t 'IEEE_ethernet'</code>

(This `dlc` driver is included on the AIX CD. Please consult your AIX documentation on installing these drivers.)

2. Make sure you are trying to open the correct port on the device. This port should be defined and available. This device should also have an entry in `/dev`.

errno = 6 No such device, or address (Trying to open a device that is not defined.)

errno = 11 Resource not available (Not enough disk space in `/var/tpssna` or not enough memory to run the program.)

errno = 13 Attempting to open device without correct permissions (The person trying to run the program does not have the proper permissions. Try starting the program as `root` user.)

Listed here are the most common **return codes** that are encountered during startup.

return code = 40 XID mismatch (Verify the XID with the Host.)

return code = 41 XID CPNAME missing, invalid, or mismatch (Verify the information given by the Host. This could be a result of

upgrading your connection from a PU 2.0 -> 2.1. Confirm information with Host.)

- return code = 42** XID node PU mismatch (Verify the information given by the Host. This could be a result of an upgrading your connection from a PU 2.0 -> 2.1. Confirm information with Host.)
- return code = 66** ACTPU rejected (The Host did not allow your connection. Check with the Host for the cause.)
- return code = 67** DEACTPU received (The Host has shutdown the connection. Check with the Host for the cause.)
- return code = 111** Invalid SNA version (Usually happens as a result of someone trying to upgrade SNA without stopping the product first. Stop the SNA, re-install, and restart.)
- return code = -905** Unusual network condition (PU is defined to be a leased line when in fact it is a switched.)
- return code = -920** Cannot find remote (There is something physically wrong. SNA cannot reach the destination.)

Common Questions:

Can TPS[®]/SNA be started from a script?

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

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

To stop logging: Edit your config file in `/var/tpssna/conf/<config filename>`. Comment (#) the line that say 'LOG='. Then stop and restart SNA. Leaving logging turned on could fill your /var file system.

To start logging: Edit your config file in `/var/tpssna/conf/<config filename>`. Uncomment (remove the #) or add the line that say 'LOG=LONG'. Then stop and restart SNA. The log files will appear in `/var/tpssna/logs/<config filename>`.

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. To be safe, purchase annual maintenance.

What version of TPS®/SNA am I using?

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

I am using a router to make the connection to the Host; will I run into any problems?

Keep in mind that router configuration is very important. The router should expect to see SNA frames and be able to pass it on to the Host. Consult your router manual for setup instructions.

I am connecting to a router that is turning around and communicating TCP/IP to the Host, will I run into problems?

This is called Data Link Switching (DLSw). Router configuration is very important. The router should be configured to be the one that does the actual conversion. Consult your router manual for setup instructions.

I want to run multiple PUs off one UNIX box, how do I do that?

You will need to make a separate configuration file for each PU and start each PU individually. If you are using only one token ring card and want to run multiple PUs consult the TPS®/SNA User's Guide on configuring a LCLSAP and RMTSAP.

When I try to start any TPS®/SNA program I get a message about it "not found".

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

I was using IBM SNA and want to convert to TPS®/SNA, what do I do?

TPS®/SNA has a program that will convert IBM SNA to ours. Run the program: *snacnv* (refer to TPS®/SNA User's Guide for options). This will create a SNA configuration file in */var/tpssna/conf* with the name of your profile. You can now try to start the connection.

Do I have to have a CPNAME and XID?

This will depend on your Host. Check with them.

How do I configure my system for Data Link Switching (DLSw)?

The preferred setup is to allow a router to handle the DLSw. In this case, your SNA configuration file should look identical to a token ring or Ethernet configuration file. Your router should be setup to pass the RMTADDR on to the host. Some configuration must be made on the router side to allow DLSw. Please refer to your router User's Guide for setup

information. The second way is to let our software do the DLSw. In this case you would use the ssp configuration file. Please refer to “Appendix D: Sample configuration files” for an example.

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 SNA log file created by turning on logging.

A full description of the problem and if this was working before.

Which software you are using and the output of the following command:

```
snastart -ver
```

2. Any changes that have taken place recently (such as OS upgrade, replacing the communication card, changing how you connect to your host).

Any kind of software that you may be using in conjunction with ours.

Appendix A: Information needed from your host

For SDLC:

<u>TPS®/SNA keyword</u>	<u>Host term</u>
IFRAME	MAXDATA
STNADDR ADDR	
ENCODING	NRZ or NRZI
XID IDBLK and IDNUM	
CPNAME NETID and PU name	
LU numbers LOCADDR numbers (ranges)	

For token ring, Ethernet, 802.3 Ethernet:

<u>TPS®/SNA keyword</u>	<u>Host term</u>
IFRAME	MAXDATA
RMTADDR	Locally administered address or token-ring address of host
XID IDBLK and IDNUM	
CPNAME NETID and PU name	
LU numbers LOCADDR numbers (ranges)	

For X.25:

<u>TPS®/SNA keyword</u>	<u>Host term</u>
IFRAME	MAXDATA
RMTADDR	Remote X.25 address
XID IDBLK and IDNUM	
CPNAME NETID and PU name	
LU numbers LOCADDR numbers (ranges)	

Appendix B: Sample configuration files

Files included The following sample configuration files are included with your package:

sna.cnf Sample SNA configuration file
ppu Sample primary PU configuration file
spu Sample secondary PU configuration file
node Sample PU type 2.1 configuration file
token1 Sample secondary PU configuration file for token ring
token2 Sample PU type 2.1 configuration file for token ring
ether Sample secondary PU configuration file for Ethernet
8023 Sample secondary PU configuration file for 802.3 Ethernet
ssp Sample secondary PU configuration file for Switch to Switch
 protocol (DLSw)

Comments in these files, which essentially summarize the information given in this manual, have been omitted.

sna.cnf

```
cpname=NET01.NETCP
xid=05D00001
sideinfo=CPISIDE1, plu=NET01.RLU1, rtpn=remotetpnl, mode=#BATCH
mode=LU62, maxsess=4, recpace=3
tpn=cpitests, exename=/lu0/sna/cpitests
llu=NET01.LU01
```

ppu

```
LINETYPE=SDLCP
LEASED=Y
DEVICE=mpq0
IFRAME=4096
STNADDR=128
ENCODING=NRZI
LOG=NO
LINERETRY=10
#
LU=2-4, NOTIFY=YES, LOG=NO
```

spu

```
LINETYPE=SDLCS
LEASED=Y
DEVICE=mpq1
IFRAME=4096
STNADDR=128
ENCODING=NRZI
LOG=NO
LINERETRY=10
#
LU=2-4, NOTIFY=YES, LOG=NO
```

node

```
LINETYPE=SDLCN
  LEASED=Y
  DEVICE=mpq1
  IFRAME=521
  STNADDR=128
  ENCODING=NRZI
  LOG=NO
  LINERETRY=10
```

token1

```
LINETYPE=TOKEN
  PUTYPE=SEC
  DEVICE=tok0
  RMTADDR=1000104F5BAB
  LINERETRY=10
  #
  LU=2-4, NOTIFY=YES, LOG=NO
```

token2

```
LINETYPE=TOKEN
  PUTYPE=EN
  DEVICE=tok0
  RMTADDR=1000104F5BAB
  LINERETRY=10
  #
  LU=2-4, NOTIFY=YES, LOG=NO
```

ether

```
LINETYPE=ETHER
  PUTYPE=SEC
  DEVICE=ent0
  RMTADDR=1000104F5BAB
  LINERETRY=10
  #
```

LU=2-4, NOTIFY=YES, LOG=NO

8023

```
LINETYPE=8023
  PUTYPE=SEC
  DEVICE=ent0
  RMTADDR=1000104F5BAB
  LINERETRY=10
#
LU=2-4, NOTIFY=YES, LOG=NO
```

ssp

```
LINETYPE=SSP
  PUTYPE=SEC
  DEVICE=tok0
  LCLADDR=10005A4F0A1F
  RMTADDR=10005AB1D1F2
  LINERETRY=10
#
LU=2-4, NOTIFY=YES, LOG=NO
```

Appendix C: Return codes & Errno Values

TPS®/SNA message numbers:

0	Unused message
1	Error opening trace file, errno=
2	Invalid file ID, ID=
3	Function timeout
4	Poll error, errno=
5	Error accessing configuration file
6	Error accessing partner configuration file
7	Error accessing sna control file
8	Error allocating shared memory, errno=
9	Error attaching to shared memory, errno=
10	Error freeing shared memory, errno=
11	Error getting shared memory, errno=
12	Create error on inbound pipe, errno=
13	Open error on inbound pipe, errno=
14	Close error on inbound pipe, errno=
15	Delete error on inbound pipe, errno=
16	Read error on inbound pipe, errno=
17	Read error on inbound pipe, length=
18	Write error on inbound pipe, errno=
19	Open error on outbound pipe, errno=
20	Write error on outbound pipe, errno=
21	Broken pipe connection
22	Message buffer overrun, lu=
23	Semaphore allocate error, errno=
24	Semaphore set error, errno=
25	Semaphore delete error, errno=
26	Invalid message received, message type=
27	Invalid PU traffic, not session or network data
28	Invalid PU/SSCP traffic, invalid message type
29	Message for invalid LU address, lu=
30	LU is starting, lu=
31	LU is stopping, lu=
32	Stop request received
33	Cancel request received
34	Device open error, errno=
35	Device close error, errno=
36	Device read error, errno=
37	Device write error, errno=
38	Device write error on XID, errno=
39	Device read error on XID, errno=
40	XID mismatch
41	XID CP name missing, invalid, or mismatch
42	XID node or PU type mismatch
43	Already active
44	Ioctl function error, errno=
45	Result indicator=
46	Ioctl error on enable SAP, errno=
47	Error on enable SAP, rc=
48	Ioctl error on disable SAP, errno=

49 Error on disable SAP, rc=
 50 Ioctl error on start link station, errno=
 51 Error on start link station, rc=
 52 Ioctl error on halt link station, errno=
 53 Error on halt link station, rc=
 54 Ioctl error on contact station, errno=
 55 Error on contact station, rc=
 56 Station halted, rc=
 57 Station timeout, rc=
 58 Configuration file not found or access error
 59 Read error on configuration file
 60 Invalid configuration file parameters
 61 Configuration file name not entered
 62 LUs not configured
 63 Cancelled by operator
 64 No message available
 65 Wait required
 66 ACTPU rejected
 67 DACTPU received
 68 Contact error, errno=
 69 Exception instead of XID data received
 70 Invalid PU version on connected PU
 71 Invalid keyword, line=
 72 Syntax error, line=
 73 Invalid hexadecimal value, line=
 74 Invalid numeric value, line=
 75 Invalid length, line=
 76 Value is out of range, line=
 77 Invalid character, line=
 78 Table overflow, line=
 79 Invalid network name, line=
 80 System error number, errno=
 81 X.25 Initialization/Socket error, errno=
 82 X.25 Connection ended
 83 X.25 Close error, errno=
 84 X.25 Call error, errno=
 85 X.25 Getting counter error, errno=
 86 X.25 Waiting on counter error, errno=
 87 X.25 Removing counter error, errno=
 88 X.25 Bind error, errno=
 89 X.25 Allocation of PVC, errno=
 90 X.25 - unused message
 91 X.25 Listen error, errno=
 92 X.25 Connection error
 93 X.25 Reset Confirmation received
 94 X.25 Reset received
 95 X.25 Invalid packet received
 96 X.25 Call clear received, cause=
 97 X.25 Call clear received, diagnostic=
 98 X.25 Acknowledgement failure, errno=
 99 Error forking new process, errno=
 100 Read buffer is too small for data received
 101 SNA table is full
 102 SNA PLU table is full
 103 SNA session table is full
 104 SNA conversation table is full

105 SNA local lu table is full
 106 SNA sideinfo table is full
 107 SNA mode table is full
 108 SNA transaction program is full
 109 SNA mode table entry not found
 110 SNA session limit is closing or exceeded
 111 Invalid SNA version
 112 Error allocating storage
 113 Message segmenting error
 114 Session state error
 115 PIU sequence number error
 116 Local LU not found, llu=
 117 Local network ID mismatch, netid=
 118 Remote network ID mismatch, netid=
 119 Duplicate PLU name=
 120 EXR received
 121 Negative response received
 122 Session not found
 123 Dependent LU 6.2 invalid with PU type EN or NN
 124 XID I-Frame size error
 125 XID Link Station role error
 126 Pacing buffer overflow
 127 Pacing buffer size exceeded
 128 Open error on snatp pipe, errno=
 129 Write error on snatp pipe, errno=
 130 XID and CPNAME are required
 131 IOCTL PUSH error on streams, errno=
 132 Station reset, rc=
 133 Duplicate or invalid session request, session=
 134 Partner PU or MP driver is not started
 135 Partner PU name mismatch
 136 Partner PU ended
 137 I-Frame size mismatch
 138 Passthru PU name is invalid or not allowed
 139 Stop request received from partner
 140 SNA version =
 141 Waiting for passthru partner load
 142 Waiting for passthru partner start
 143 Opening device
 144 Device opened
 145 Closing device
 146 Process terminating, return code=
 147 LU,mode session limit exceeded
 148 STP cmrcv error, rc=
 149 STP CPI call error, rc=
 150 STP cmsend error, rc=
 151 STP invalid data received code=
 152 STP invalid status received code=
 153 STP error, see snatp log, rc=
 154 STP mode table is full
 155 STP SNA enqueue error, errno=
 156 CNOS command race error
 157 CNOS mode name not found at destination
 158 Invalid STP request code
 159 Duplicate session address
 160 PU types are invalid or mismatched

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161 Primary link station
162 Inconsistent CALLTYPE, RMTADDR, RMTNAME fields
163 Inconsistent SDLC multipoint or FID3-4 options
164 SNA is not active
165 PU is not active
166 PU is active
167 PU =
168 Logging turned on
169 Logging turned off
170 LU open error reported by PU
171 LU sessions cannot be LU type 6.2
171 Duplicate NetID in CPNAME or invalid CPNAME
172 Link or PU number mismatch
173 PLU name locate error
175 Invalid PIU TH FID fields
176 Invalid PIU TH routing fields
177 Messages purged from queue
178 Device process terminating, return code=
179 Inbound call not accepted
180 Already in use
181 Invalid pacing message
182 Signal code=
183 CP-CP session for NetID already active
184 Error accessing Topology Database
185 No response from remote system
186 Invalid XID data format
187 XID error reported by remote system
188 ***** continuation of log data *****
189 Connect or Send Capabilities error, errno=
190 Accept error, errno=
191 SSP Receive Capabilities Exchange Err, errno=
192 SSP Circuit startup Error, errno=
193 SSP Circuit completion Error, errno=
194 Inactivity timeout
195 Disconnect request received
196 Data Link Control exception received
197 unused 197
198 unused 198
199 unused 199
200 Get_except
201 Enable_SAP
202 DisableSAP
203 Start_Link
204 Halt_Link
205 Contact
206 Read_Data
207 Readx_Data
208 Write_Data
209 Wrtx_Data
210 Read_Pipe
211 Write_Pipe
212 Write_XID
213 Read_XID
214 IOCTL
215 Trace_Info
216 Open

217	Exception
218	Rd_lu_Data
219	Wr_lu_Data
220	Bind
221	Connect
222	Read_DLC
223	Write_DLC
224	Interrupt
225	Accept

Following is a list of the system return codes for AIX. These values should be the same in all versions of UNIX. However, if you receive return codes which are not on the list or seem incorrect, then look at the file `/usr/include/sys/errno.h` for a complete list of system return codes on your version of UNIX.

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

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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	Cannot 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	Cannot 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

IBM AIX DLC return codes:

101	conversation type mismatch
102	unsuccessful
103	reconnect not supported
104	sync_level not supported
105	allocation failure no_retry
106	allocation failure retry
107	reconnect not supported by lu

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108 sync_level not supported by lu
109 invalid rid
110 command not issued in allowed state
111 resource failure retry
112 resource failure no_retry
113 SNA protocol violation
114 pip data not supported
115 sync_level not supported by program
116 reconnect not supported by program
117 cannot reconnect TP, no_retry
118 program_error purging
119 program_error no_truncate
120 program_error truncate
121 deallocate_abend_program
122 cmd not issued on logical rec boundary
123 cannot find the mode control block
124 cannot reconnect TP, retry
125 SNA connection has been stopped
126 recovery_level = restart not supported
127 TPN not recognized
129 normal deallocation
130 deallocate_abend_svc
131 deallocate_abend_timer
132 wrong pip specified
133 invalid acc specified
134 svc_error purging
135 svc_error no_truncate
136 svc_error truncate
137 delay_allocation not supported
138 unsupported type specified
139 FMH data not supported by mapped conv
140 MAP name not supported by mapped conv
149 @123 received cancel
150 @123 sense code included
151 Not a CP connection
160 SNA system failure
161 No session as session lmt set to 0
162 No session as resource failure
163 No rcb
164 INOP receive, errno to GSNA_DD only
165 Hierarchical Reset receive
166 No LU registered
170 SSCP - PU session in use by other app
171 No more SSCP - PU session available
172 application server not defined
173 Invalid SSCP_ID specified
174 Invalid length specified
175 ACTPU (ERP) received
176 SSCP - PU session not active
177 Invalid NMVT HEADER specified