

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

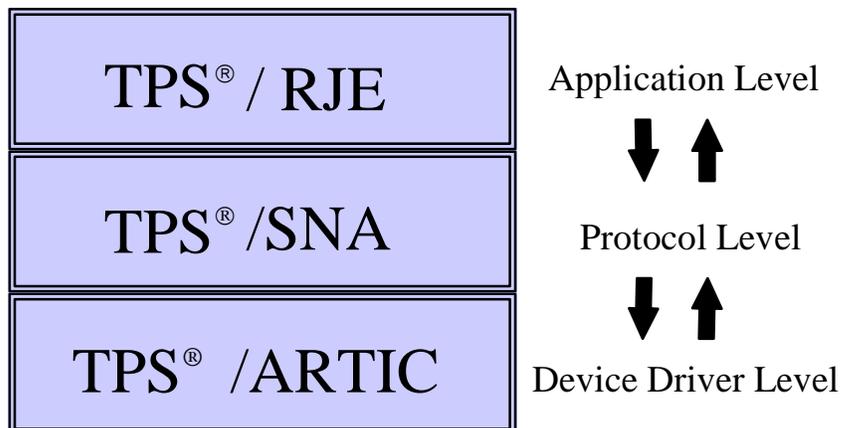
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•About this Guide

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

•What is RJE?

TPS[®]/RJE allows a host to see a downstream computer (UNIX machine) as a remote print, punch, exchange, or reader device. TPS[®]/RJE emulates the IBM 3777 Model 4 Workstation (essentially a card punch, card reader, and console) allowing communication with RJE subsystems such as JES2/JES3 and POWER. TPS[®]/RJE is primarily used for sending data up to the host, receiving data, and can be used for issuing RJE console commands. TPS[®]/RJE 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 RJE might be a problem with the protocol level instead (TPS[®]/SNA or IBM SNA). For this reason it is important that your connection with the Host is error free before troubleshooting any RJE problem. Make sure the lower levels are working correctly.

•Installing/Upgrading TPS[®]/RJE

Before beginning installation:

1. Change to root user and root (/) directory.
2. If you are upgrading, make sure the TPS[®]/RJE 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 *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.)

•Common Install Problems

To prevent problems when installing TPS[®]/RJE 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 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 TPS[®]/RJE

Configuring TPS[®]/RJE requires several steps:

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- configuring the Host side
- configuring the communication side of the connection (TPS[®]/SNA or IBM SNA)
- configuring TPS[®]/RJE

This manual will only cover the configuring the TPS[®]/RJE portion. For complete instructions on configuring the Host and communication side please refer to your documentation.

•Notes about Configuring your RJE software

With all the options available in TPS[®]/RJE it might be difficult to understand, however most setups do not require all these options. The most important part of configuring your RJE program is planning what you want the program to do. Please read all the options first to determine what option(s) will fit your need (see “RJE Configuration File”). Careful planning should be made to know what kind of forms you will be receiving, what you want to do with each form, the layout of each form, etc. Sending jobs up to the Host might require careful execution and timed scripts (written by you) to submit them.

•RJE Configuration File

Your RJE configuration file is located in `/var/tpssrje/conf/rje.cf` (if you are using IBM/SNA) or in `/var/tpstrje/conf/rje.cf` (if you are using TPS[®]/SNA). You can rename it, however remember that you are using a different name than the default. So commands that use the config filename (`rjstart`, `rjstop`, etc.) you will use this new name verses `rje.cf`. This file can be edited through `vi` or any Unix text editor. Your RJE configuration file should look something like this:

```
#
# Sample RJE configuration file for SNA Services/6000
#
XLAT, ""
FNTBL, ""
RECOVER,1
# LOG
JOURNAL
EXTENDPDIR
PRTCPY
LU,"rjexp01", "LOGON APPLID(JES) DATA(RMT1)"
RDR
EXCH, "| qprt",1,132,132,"5,10,15,20,30",1,66,66,"1,10,20,30,40,50", ASIS
PRT, "| qprt",1,132,132,"5,10,15,20,30",1,66,66,"1,10,20,30,40,50", FRMFD
PUN, "/var/tpssrje/data/punch1",1,120,120,"",1,66,66,"", IGNTR
```

XLAT - This optional keyword is used if you want to use a non-standard translation table to convert ASCII to EBCDIC (or vice-versa) specify that file name within the “ ” marks. Otherwise; the TPS[®]

software will translate EBCDIC data received from the Host to ASCII on the Unix machine (or vice-versa when sending data up to Host).

FNTBL - (form name table) This optional keyword allows you to redirect the output of jobs downloaded from the host according to a form name assigned to each job in the PDIR (Peripheral Datastream Information Record). In order to use this option, the host will need to turn on the PDIR on their side. Print jobs received from the host will be named the following:

jobname.formname.nnn (where nnn is an incremented number)

To use this option, specify the file name within the “ “ marks. Make sure the form name table is located in the conf directory. Example of a form name table (rje.fnt):

```
STD1,"| qprt",1,131,131,"5,10,15",1,60,60,"1,10,20"  
PUN1,"/rje/punch/rjepunch",1,80,80,"",1,66,66,"",ASIS  
1234,"/rje/rjeprint1",1,132,132,"5,10,15,20,30",1,66,66,"1,10,20,30,40,50",ASIS  
SHORT,"/rje/rjeprint",1,80,80,"5,10,15,20,30",1,30,30,"1,10,20,30,40,50"ASIS  
STD,"| qprt",1,132,132,"5,10,15,20,30",1,66,66,"1,10,20,30,40,50",FRMFD
```

The form name table bypasses any PRT, PUN, or EXCH devices defined in your RJE configuration file. If you have the FNTBL statement in your configuration file, the output destination (ex: /rje/rjeprint) and all tabs and margin settings are overwritten with the values of the form name (ex: STD1) instead of what's used in the PRT, PUN, or EXCH device statements in your RJE configuration file.

RECOVER - This optional keyword is the number of seconds that the application is to wait before attempting to log in again when LU - LU connection is lost. A value of 0 tells the application not to log on.

LOG - This optional keyword should only be used for troubleshooting since these files can grow very quickly. When this option is enabled, log files will be created in the logs subdirectory. There are three log files that can be created.

- rjemain.nnnn is created every time RJE is started. It logs the main RJE process and records when separate rjein and rjeout processes are started and stopped.
- rjein.nnnn is created for each job downloaded from the host.
- rjeout.nnnn is created for each job submitted to the host.

nnnn represents the ID of the process (PID) which created the file.

JOURNAL - This optional keyword creates a file that contains all information that has been passed across the console screen. The file will be named Journal and is located in the logs directory. The journal file is a record of jobs sent and received from the host.

EXTENDPDIR - This optional keyword causes further extensions to be added to the output file name. The filename will now consist of the following:

jobname.formname.fcbyname.ucsname.nnn (where nnn is an incremented number).

Just like the FNTBL, the host will need to enable the PDIR on their side.

PRTCPY - This optional keyword causes RJE to use the COPIES field in the PDIR to determine whether additional copies should be printed. If you are using PRTCPY and have the following statement in your configuration file:

```
PRT," | qprt -N1",1,132,132,"",1,66,66,""
```

and PDIR specifies a 2 in the copies field, the job will be sent to the spooler with

```
qprt -N3 filename
```

where copies is the number of additional copies plus the original. Please check the TPS®/RJE User's Guide for detailed information on PRTCPY.

LU - The LU statements give details for the connection to be used for TPS®/RJE transmissions. A maximum of six LU statements can be defined. This allows multiple transmissions to be received at one time. A sample LU statement is as follows:

```
LU,"rjeczp01","LOGON APPLID(JES) DATA(RMT1) "
```

Where *rjeczp01* is the connection name or profile name from TPS®/SNA or IBM SNA and *LOGON APPLID(JES) DATA(RMT1)* is the logon string given to you by your host. Multiple LU statements can be included just on different lines.

DEVICES - TPS®/RJE emulates a 3777 card reader and punch (a physical device). Although the three types of devices available through RJE (PRT, PUN, EXCH) seem to be interchangeable, each has a very different meaning in terms of hardware being emulated, and therefore a different meaning to the mainframe.

PRT - The print queue on the mainframe generally includes forms control information. This device is generally used for printing out of text data and is generally the most common emulated device for RJE. A sample PRT statement is as follows:

```
PRT," | qprt",1,132,132,"5,10,15,20,30",1,66,66,"1,10,20,30,40,50", FRMFD
```

PUN - The punch queue on a 3777 was generally used to receive binary data or programs. A sample PUN statement is as follows:

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```
PUN, "/t/punch1", 1, 132, 132, "5, 10, 15, 20, 30", 1, 66, 66, "1, 10, 20, 30, 40, 50", IGNT
```

EXCH - There are no EXCH queues on the host. This device was originally developed to send data to a diskette. A sample EXCH statement is as follows:

```
EXCH, "| qprt", 1, 132, 132, "5, 10, 15, 20, 30", 1, 66, 66, "1, 10, 20, 30, 40, 50", ASIS
```

Where:

- *PRT*, *PUN*, or *EXCH* defines what kind of device it is.
- *| qprt*, */var/tpssrje/data/punch1* tells what you want to do with the output received. Output can be piped to scripts and also saved to files by specifying the directory to store the output.
- *1, 132, 132* indicate the horizontal margins: left margin, right margin, and maximum print position.
- *5, 10, 15, 20, 30* is the horizontal tab stops.
- *1, 66, 66* indicates vertical margins: top, bottom, and maximum line number.
- *1, 10, 20, 30, 40, 50* indicates vertical tab settings.
- *ASIS*, *FRMFD*, *IGNTR*, *IGTFF* indicates how you want the data translated. Ordinarily data received is translated from EBCDIC to ASCII, however using one of these options overrides normal translation. *ASIS* no translation is performed. *FRMFD* data is translated but the form feed character is passed on without converting to line feeds. *IGNTR* ignores transparency codes from host and translates all data flagged as transparent. *IGNFF* transparency codes are ignored, and the form-feed character is passed without translation.

RDR - There is a four type of 3777 device that can be emulated by RJE. This device is called a Reader. Readers are used to receive console messages and to send jobs up to the host. A sample RDR statement is as follows:

•RJE Commands:

Start RJE:

```
nohup rjestart <config.cf> &
```

where:

config.cf is the name of your RJE configuration file; e.g., *rje.cf*

Stop all RJE processes:

rjestop

Display the status of RJE:

rjestatus

Run the RJE console emulator (if your remote definition permits it):

rjeconsole

Sending a console command:

rjeconscmd conn file target

where:

conn specifies the connection name to be used

file is the name of the file containing the console command

target is either `appl` (if you wish to send the contents to an application) or `sscp` (if you wish to send a logon string to the SSCP)

Submitting a job:

rjesubmit [-T] [-E] [-P] [-D] [-c conn] [-l nnn] jobname

-T job is to be sent in transparent mode (no ASCII to EBCDIC translation)

-E data is to be sent in EBCDIC format

-P records are to be padded with spaces to the specified record length

-D delete the file after transmission

-c specifies the connection name to be used (either the connection name or profile name)

-l the record size for the job (between 80 and 1024 bytes)

jobname the name of the file to be transmitted

Deleting a job:

rjecontrol delete nnn

nnn is the number of a job in queue

Canceling a job:

rjecontrol cancel devn

devn is a device name and number (e.g., PUN2)

Rerouting a job:

```
rjecontrol route devn path
```

devn is a device name and number (e.g., PUN2)

path is the path name of a file or a pipe to a process (as above)

Resetting a connection:

```
rjecontrol reset conn
```

conn specifies the name of the connection to be reset

Recovering a connection:

```
rjecontrol recover conn
```

conn specifies the name of the connection to be recovered

Starting/Stopping log files:

```
rjecontrol startlog  
rjecontrol stoplog
```

Starting/Stopping the journal file:

```
rjecontrol startjournal  
rjecontrol stopjournal
```

•Turning on and using logging:

TPS[®]/RJE provides log file options which can be activated from the RJE configuration file (*rje.cf*) or the command line (*rjecontrol startlog*). If you turn on logging through the configuration file (recommended), you will need to stop/restart RJE for logging to take place.

The log files will be kept in either */var/tpstrje/logs* (if using TPS[®]/SNA) or */var/tpssrje/logs* (if using IBM SNA).

There are three log files that can be created.

- *rjemain.nnnn* is created every time RJE is started. It logs the main RJE process and records when separate *rjein* and *rjeout* processes are started and stopped.

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- `rjein.nnnn` (`rjein` process) is created for each job downloaded from the host.
- `rjeout.nnnn` (`rjeout` process) is created for each job submitted to the host.

****nnnn** represents the ID of the process (PID) which created the file.**

Make sure to turn off logging when not troubleshooting a problem. Log files can grow quickly and consume large amounts of disk space.

•Common problems:

When diagnosing a TPS®/RJE it is often required to turn on logging. Most problems and errors will be noted in one of the three different log files (`rjemain`, `rjein`, and/or `rjeout`). `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 RJE problem can be tricky, please email TPS® Technical Support log files along with a description of your problem. For a full description of all `errno` and return code values please refer to your *TPS®/RJE User's Guide* or *Appendix A: UNIX Return Codes*.

Problem: The PRT, EXCH, or PUN device becomes drained or goes offline at the host.

Solution: Generally, this error occurs as a result of an error being reported from the actual PRT, PUN, EXCH, and device. It is important to turn on logging for troubleshooting. You may be able to restart the device if you have console permissions.

Problem: RJE does not start.

Solution: If you are using the `nohup` command, check the `nohup.out` file in the current directory. Any other errors should be reported to the screen. If you are sending it to the background (`&`) make sure to use `nohup` in front of `rjestart`.

Problem: When I try to start RJE I get an `errno=13` or I see an `errno=13` in a log file.

Solution: Make sure you are starting RJE as root, a user with root authority, or someone that is a member of group `rje`. This `errno=13` is a permission problem, make sure the executable you are trying to run has proper permissions.

Problem: I am not receiving print jobs from the host.

Solution: Turn on logging. Also, check to see that no jobs are being held on the host. Jobs can be held because of an error being reported or the console operator requested that the job be held.

Problem: The RJE program hangs or the program was not shutdown properly (someone killed the process after `rjestop` failed to shut it down) and now RJE won't start properly.

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Solution: Killing the RJE process can cause problems when the program tried to restart. While the program is stopped, clear out everything in the `/var/tpstrje/pipes` (for TPS[®]/SNA) or `/var/tpssrje/pipes` (IBM SNA). Next, run `rjestatus` this will display the share memory ID. Once you have that id number, run `ipcrm -m id`. Now you can restart RJE.

Problem: I am unable to get a HOST connection.

Solution: This is probably because of protocol problems (SNA). Make sure that the line is active for SNA (`snapstat -l` if you are using TPS[®]/SNA).

•Common Questions:

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

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

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

See “Turning on and using logging.”

How do I send a file or job to the host?

When a job is sent to the host, it is generally necessary to place certain information at the beginning and end of the file to communicate with the host application. Generally, this file is wrapped with JCL code. The user is responsible for writing code and including it within the file. Once data has been wrapped with JCL, the user can use the `rjesubmit` program to send the job.

How do I know when a job has been sent or received?

All information about jobs being sent and received is kept in the journal file. Make sure you have the keyword `JOURNAL` set in your RJE configuration file. This text file will be kept in `/var/tps(t or s)rje/logs/journal`.

How do I speed up the transfer?

Several factors may increase speed:

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- **Compression:** Allows repeated characters to be sent in compressed form (enabled by the host).
- **Compaction:** Involves the use of table to reduce the size of data (enabled by the host).
- **Exception response:** If both exception and definite response are enabled in the bind (sent by host), only the appropriate response will be expected. Turning this off will save time.
- **ru size:** This is the size of the data packet. The larger the RU size the fewer packets will be received, reducing the header and trailer packets sent and saving time. This option is configured through SNA.
- **Pacing:** Both the `VPACING` and `PACING` parameters in VTAM (Host) should be set to 7 (the maximum).

Can TPS[®]/RJE be configured to connect to multiple hosts at the same time?

No. TPS[®]/RJE can only support one concurrent connection to one host at a time.

How many LUs?

255 per PU on SNA.

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[®]/RJE am I using?

Run `rjstart -ver`, this will display the serial number, machine ID it is registered to, compile date, and the software version.

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

Go into `/usr/lpp/tps(t or s)rje*/bin` and link every file to `/usr/bin`. Make sure that everything in `/usr/lpp/tps(t or s)rje*/lib` is linked to `/usr/lib` (* t for TPS[®]/SNA or s 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 be 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 RJE log files 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:

```
rjstart -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.

•Appendix A: UNIX Return codes

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

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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