

Cleo® V6.0.7.21 SSL Quick Start Guide For Linux Redhat 3-5 Linux Redhat/VMWARE 3.0-5.0 Install from a CPIO Image

Read this section first!

This Quick Start Guide contains information about installing the 6.0.7.21 version of the Cleo TN3270/TN5250 software. This version also supports a TN3270 **SSL** connection to a TNSERVER.

Important!

Read this document before installing and using the Cleo software. Refer to your Cleo SNA documentation for additional usage information. If you have questions about installing and using this product, contact Cleo Communications Technical Support between the hours of 8:30 AM and 5:00 PM (EST/EDT) at: (866) 444-2536.



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Quick Start Guide Organization

Instructions for installation of Cleo TN3270/TN5250 and TN3270 SSL V6.0.7.21 are provided in this Quick Start Guide:

- ▶ TN3270/TN5250 connection over TCP/IP
- ▶ Optionally a TNSERVER that supports SSL
- ▶ Appendix A – Cleo Utilities
- ▶ Appendix B – HOST/TNSERVER Configuration Information
- ▶ Appendix C – Trouble Shooting Information
- ▶ Appendix D – TNCONFIG

For more information, please refer to the Cleo Installation Guide and the Cleo Administration Guide included with your product.

Appendix B contains a questionnaire for obtaining necessary host information. **It is recommended that you obtain this information before you install because some of the this information is required during the install process.**

CPIO IMAGE CONVENTIONS

Instructions in this document assume that the CPIO Image of the Cleo TN software has been downloaded and that the CPIO image has been unzipped, resulting in the file(CleoTNLINUXV60721cpio).

The CleoTNLINUXV60721cpio binary file then has to be moved to the Linux Redhat system and placed in a directory called /tmp/cleo that was created in the Linux Redhat system's /tmp directory, using the following commands.

```
Login as "root"  
# cd /tmp  
# mkdir cleo
```

Then, the Cleo TN Software needs to be moved from the cpio file "CleoTNLINUXV60721cpio file, by issuing the following commands:

```
# cd /tmp/cleo  
# cpio -iduvB < CleoTNLINUXV60721cpio
```

There is also an optional CPIO Image that contains all the Cleo TN Documentation. This CPIO Image is very large, and it is NOT necessary to download and move the CPIO Documentation Image to your Linux Redhat system, in order to install, configure, and use the Cleo TN Software.

To place the Documentation Image on the Linux Redhat system, unzip the CPIO image, which results in the file (CleoTNLINUXDOCScpio). The CleoTNLINUXDOCScpio binary file then can be moved to the Linux Redhat system and placed in a directory of your choice, for example, /cleo. For example to create the /cleo directory on the Linux Redhat system, use the following commands.

```
Login as "root"  
# cd /  
# mkdir cleo
```

The CleoTNLINUXDOCScpio binary file then has to be moved to the Linux Redhat system and placed in the directory you have created, for example, called /cleo.

Then the Documentation files, need to be moved from the CPIO Image file, for example:

```
# cd /cleo  
# cpio -iduvB < CleoTNLINUXDOCSpio
```

TN3270/TN5250 Connection Over TCP/IP

Installation of a Cleo Enterprise Networking product requires that you obtain a License file (license.conf) and a 6 Digit Cleo Serial Number. The License file is available from Cleo Communications' Sales Department at (866) 444-2536. The Cleo Serial Number will appear on your Cleo Software shipment. If you do not have a Cleo Serial Number available, please call the Cleo Communications' Sales Department.

Software Prerequisites:

- ▶ Linux Redhat 3-5

OR

- ▶ Linux Redhat Enterprise 3-5 VMWARE

Installing Cleo TN3270/TN5250 and SSL

NOTE: These procedures assume you are installing from a CPIO Image, that has been placed in the /tmp/cleo directory.

1. Login as *root*.
2. Start the installation of the TN3270/TN5250 Package

```
# cd /tmp/cleo
# ./cleoinstall
# ./cleoadd
```

You are about to run the cleoadd script, version 6.0.7.20,

```

which will install utilities for creating configuration files
and installing Cleo license files.
Do you wish to continue? (y/n): y
Installing files in /opt/tn3270/bin and /etc/opt/tn3270 ...
Would you like to install the cleotn license file now? (y/n): y
Please enter the Cleo TN3270/TN5250 Serial Number
xxxxxx
Please confirm that you want to change the Cleo TN3270/TN5250
Serial Number to the value
          ==> xxxxxx <==
?[y/n]
y
Enter the full path name of the license file to install:
/tmp/license.conf
Contents of your license file:

*****
License type:      Temporary
Expiry date:      Thu Jul 20 00:00:00 2000
Shelf life:       <none>
Box name:         <none>
Total sessions:   500
*****

Do you wish to continue? (y/n): y
Stopping the TN3270/TN5250 License Daemon
Saving old license in license.bak.
The license is now installed in /etc/opt/tn3270.
Starting the TN3270/TN5250 License Daemon
# cd /opt/tn3270/bin

```

3. Set your path to include the new components with the following commands in your profile:

```

# PATH=$PATH:/opt/tn3270/bin
# export PATH

```

4. Cleo Communications supplies several optional utility scripts and programs that may be useful for automated kernel tuning, and starting and stopping TN3270/TN5250 emulators. Please refer to **Appendix A** of this manual for details.

Instructions for Installing or Updating License

NOTE: Cleo Communications will supply the license.conf file to you.

Install the license file (this step can be included with the previous cleoad function)

```
# /opt/tn3270/bin/tnaddlic
```

Enter the full path name of the license file to install:

```
/tmp/license.conf
```

Contents of your license file:

```
*****
```

```
License type:      Temporary
Expiry date:       Thu Jul 20 00:00:00 2000
Shelf life:        <none>
Box name:          <none>
Total sessions:    500
```

```
*****
```

Do you wish to continue? (y/n): y

Stopping the TN3270/TN5250 License Daemon

Saving old license in license.bak.

The license is now installed in /etc/opt/tn3270.

Starting the TN3270/TN5250 License Daemon

Instructions for Installing, Displaying, or Modifying Cleo Serial Number

NOTE: Cleo Communications supplies the Cleo Serial Number with your software shipment.

Install the serial number(this step can be included with the previous cleoaddd function)

```
# /opt/tn3270/bin/cleoserial -w xxxxxx
  Where: xxxxxx is the Cleo 6 digit Serial Number
```

Please confirm that you want to change the Cleo TN3270/TN5250 Serial Number to the value

==> xxxxxx <==

?[y/n]

Y

Display the serial number

```
# /opt/tn3270/bin/cleoserial -r
```

The Cleo TN3270/TN5250 Serial Number has a value of

==> xxxxxx <==

Modify the serial number

```
# /opt/tn3270/bin/cleoserial -w yyyyyy
  Where: yyyyyy is the new Cleo 6 digit Serial Number
```

The Current Cleo TN3270/TN5250 Serial Number has a value of

==> xxxxxx <==

Do you want to change the Serial Number to the value

==> yyyyyy <==

?[y/n]

Y

Instructions for Configuring the TN3270/TN5250

1. The program **tnconfig** must be executed to make the scripts for starting the TN3270/TN5250 sessions. Please see **Appendix D** for more details about **tnconfig**.

To use TN3270 sessions from a pool of **lus** on one host, execute **tnconfig** by entering the following command, and then **proceed to step 10**:

```
# tnconfig -h host_name[:port id] -n number of lus
```

Note: The default portid is 23 and the default protocol type is TN3270.

A sample execution of tnconfig is as follows (for port 99):

```
# tnconfig -h tnsna:99 -n 24
```

To use TN3270 sessions from a pool of **lus** on one host/tnserver that supports **SSL**, execute **tnconfig** by entering the following command, and then **proceed to step 10**:

```
# tnconfig -h host_name[:port id] -n number of lus -ssl 3
```

Note: The default portid is 23 and **-ssl 3** sets the connection type to SSL Version 3. The host/tnserver must support **SSL**.

A sample execution of tnconfig is as follows (for port 99) to a host/tnserver that supports SSL Version 3 :

```
# tnconfig -h tnsna:99 -n 24 -ssl 3
```

To use TN5250 sessions from a pool of **lus** on one host, execute **tnconfig** by entering the following command, and then **proceed to step 10**:

```
# tnconfig -h host_name[:port id] -n number of lus -p 5
```

Note: The default portid is 23 and **-p 5** sets the protocol type to TN5250.

A sample execution of tnconfig is as follows (for port 99):

```
# tnconfig -h tnsna:99 -n 24 -p 5
```

Note: In these examples, the symbolic host name “tnsna” must be listed in the “/etc/hosts” file.

NOTE: Step 1 is the most common configuration method, for both TN3270, TN3270 with SSL, and TN5250.

2. **ONLY if it is required**, to use TN3270 and TN5250 from pools of LUs on multiple hosts, execute **tnconfig** by entering the following command, then **proceed to step 10**.

```
# tnconfig -h host32701[:port id],host52501[:port id],host32702[:portid],host52502[:port id] -n #lus for host327001,#lus for host52501,#lus for host32702,#lus for host52502 -p 3,5,3,5
```

3. **ONLY if it is required**, to use TN3270 SSL with pools of LUs on multiple hosts, execute **tnconfig** by entering the following command, then **proceed to step 10**.

```
# tnconfig -h host3270ssl1[:port id],host3270ssl2[:port id]-n #lus for host3270ssl1,#lus for host3270ssl2 -ssl 3
```

4. **ONLY if it is required**, to use TN3270 or TN3270 SSL sessions with specific LU Names on one host, execute **tnconfig** by entering the following command, and then **proceed to step 10**:

```
# tnconfig -h host_name[:port id] -n number of lus -l luname 1,luname 2,...,luname x [-ssl 3]
```

A sample execution of tnconfig without SSL is as follows:

```
# tnconfig -h tnsna -n 32 -l lu1,lu2,...,lu32
```

A sample execution of tnconfig with SSL is as follows:

```
# tnconfig -h tnsna -n 32 -l lu1,lu2,...,lu32 -ssl 3
```

5. **ONLY, if it is required**, to use TN5250 sessions with specific DEVICE NAMES, on one host, execute **tnconfig** by entering the following command, and then **proceed to step 10**.

```
# tnconfig -h host name[:port id] -n number of lus -l IBM-3180,IBM-3477-FC,...,IBM-3477FG -p 5
```

6. **ONLY, if it is required**, to use TN3270 or TN3270 SSL sessions from pools of lus on multiple hosts, execute **tnconfig** by entering the following command, and then **proceed to step 10**:

```
# tnconfig -h host_name 1[:port id],host name 2[:port id],...,host_name x[:port id] -n number of lus for host_name 1,number of lus for host_name 2,...,number of lus for host_name x [-ssl 3]
```

A sample execution of tnconfig without SSL is as follows:

```
# tnconfig -h host1,host2,host3 -n 10,12,10
```

A sample execution of tnconfig with SSL is as follows:

```
# tnconfig -h host1,host2,host3 -n 10,12,10 -ssl 3
```

7. **ONLY, if it is required**, to use TN5250 sessions from pools of lus on multiple hosts, execute **tnconfig** by entering the following command, and then **proceed to step 10**.

```
# tnconfig -h host name 1[:port id],host name 2[:port id],...,host name x[:port id] -n number of lus for host name 1,number of lus for host name 2,...,number of lus for host name x -p 5,5,...,5
```

A sample execution of tnconfig is as follows:

```
# tnconfig -h host1,host2,host3 -n 10,12,2 -p 5,5,5
```

8. **ONLY, if it is required**, to use TN3270 or TN3270 SSL sessions with specific LU Names on multiple hosts, execute **tnconfig** by entering the following command, and then **proceed to step 10**:

```
# tnconfig
  -h host_name 1[:port id],host_name 2[:port id],...,host_name
  x[:port id]

  -n number of lus for host_name 1,number of lus for host_name
  2,...,number of lus for host_name x

  -l luname 1 for host_name 1,...,luname 1 for host_name
  2,...,luname 1 for host_name x,...,luname for last lu for
  host_name x

  [-ssl 3]
```

A sample execution of tnconfig without SSL is as follows:

```
# tnconfig -h host1,host2,host3
  -n 2,4,2
  -l lu1h1,lu2h1,lu1h2,lu2h2,lu3h2,lu4h2,lu1h3,lu2h3
```

A sample execution of tnconfig with SSL is as follows:

```
# tnconfig -h host1,host2,host3
  -n 2,4,2
  -l lu1h1,lu2h1,lu1h2,lu2h2,lu3h2,lu4h2,lu1h3,lu2h3
  -ssl 3
```

9. **ONLY, if it is required**, to use TN5250 sessions with specific DEVICE NAMES on multiple hosts, execute **tnconfig** by entering the following command, and then **proceed to step 10**.

```
# tnconfig
  -h host name 1[:port id],host_name 2[:port id],...,host_
  namex[:port id]

  -n number of lus for host_name 1,number of lus for host_name
  2,...,number of lus for host_name x

  -l DEVNAME for host_name 1,DEVNAME for host_name 2,...,DEVNAME
```

```
for host_name x
-p 5,5,...,5
```

A sample execution of tnconfig is as follows:

```
# tnconfig -h host52501,host52502,host52503 -n 2,3,2
-l dev1h1,dev2h1,dev1h2,dev2h2,dev3h2,dev1h3,dev2h3
-p 5,5,5
```

10. As a result of running **tnconfig**, a utility script **tnstart** is created in the `/opt/tn3270/bin` directory and specific configuration text files are created in the `/etc/opt/tn3270` directory. Run the **tnstart** utility if you want to start up configured tn3270 emulators in the background. If you run the Cleo utility **cleostart_tn** (described in **Appendix A.**), **tnstart** will be run automatically by the **cleostart_tn** utility.

Run the **mktncfg** utility to convert the newly created *tnconfig* text file(`com.txt`) to binary. This will create a `/etc/opt/tn3270/com.cfg` file. Run the following syntax:

```
# mktncfg
```

11. **NOTE: Cleo Communications supplies server optional utility scripts and programs that may be useful for starting and stopping TN3270/TN5250 emulators.** Please refer to **Appendix A** of this manual for details.
12. **NOTE: If there are specific requirements, not met in steps 1-9,** then configure the TN3270 software by editing the `/etc/opt/tn3270/tn3270-1a.txt` (created by **tnconfig**) or the `com.txt` file (see below). To configure specific requirements ...(see the *TN3270 Administration Guide* for assistance on configuration): to convert the `com.txt` file to the executable binary, perform the following:

```
# cd /etc/opt/tn3270
# cp /opt/tn3270/samples/tnsample.txt com.txt
# vi com.txt
# /opt/tn3270/tncfgtcp com.cfg
```

NOTE:

To enable SSL, right after the line that specifies the type fo TN3270 Support, for example:

```
tn3270_support = TN3270E
```

place the following line to enable SSL:

```
ssl_support = SSL3
```

Run TN3270/TN5250

Select the appropriate style file in the /etc/opt/tn3270 directory for the number of TN3270E sessions each user will have per each invocation of tn3270.

```
tn3270-1.stu    = 1  TN3270E session per invocation
tn3270-2.stu    = 2  TN3270E sessions per invocation
tn3270-3.stu    = 3  TN3270E sessions per invocation
tn3270-4.stu    = 4  TN3270E sessions per invocation
tn3270-5.stu    = 5  TN3270E sessions per invocation
tn3270-6.stu    = 6  TN3270E sessions per invocation
tn3270-7.stu    = 7  TN3270E sessions per invocation
tn3270-8.stu    = 8  TN3270E sessions per invocation
tn3270-9.stu    = 9  TN3270E sessions per invocation
tn3270-0.stu    = 10 TN3270E sessions per invocation
```

A sample execution of 1 TN3270E session per single user invocation:

```
# tn3270 -s /etc/opt/tn3270/tn3270-1.stu
```

A sample execution of 5 TN3270E sessions per single user invocation:

```
# tn3270 -s /etc/opt/tn3270/tn3270-5.stu
```

NOTE: If you have any problems using function keys, with the terminal emulator you are using to run the Cleo TN3270 software, then you may want to try an alternate set of style files. These style files do not use Function Keys to define 3270 PF keys.

```
s3270-1.stu    = 1  TN3270E session per invocation
s3270-2.stu    = 2  TN3270E sessions per invocation
s3270-3.stu    = 3  TN3270E sessions per invocation
s3270-4.stu    = 4  TN3270E sessions per invocation
s3270-5.stu    = 5  TN3270E sessions per invocation
s3270-6.stu    = 6  TN3270E sessions per invocation
s3270-7.stu    = 7  TN3270E sessions per invocation
s3270-8.stu    = 8  TN3270E sessions per invocation
s3270-9.stu    = 9  TN3270E sessions per invocation
```

```
s3270-0.stu      = 10 TN3270E sessions per invocation
```

A sample execution of 1 TN3270E session per single user invocation, using the alternate style files:

```
# tn3270 -s /etc/opt/tn3270/s3270-1.stu
```

A sample execution of 5 TN3270E sessions per single user invocation, using the alternate style files:

```
# tn3270 -s /etc/opt/tn3270/s3270-5.stu
```

TN3270/TN5250 Removal

1. Login in as *root*.
2. Terminate any running instances of the TN3270/TN5250product by entering the following command:

```
# /opt/tn3270/bin/cleostop_tn
```

3. Remove the Cleo TN3270/TN5250 by entering the following commands:

```
# rpm -e cleotn  
# cleormv
```

Appendix A – CLEO UTILITIES

The following 2 utility scripts are provided by Cleo Communications. They may be useful for starting and stopping the TN3270/TN5250 emulators. Both of these Cleo utilities reside in the /opt/tn3270/bin directory.

1. The **cleostart_tn** utility can be used to start all the configured tn3270/tn5250 emulators to run in the background. The utility first stops all the tn3270/tn5250 emulators by running the **cleostop_tn** utility and then runs the /opt/tn3270/tnstart script that runs all the configured tn3270/tn5250 emulators in the background. The **cleostart_tn** can be used to run automatically at system reboot time. The **cleostart_tn** utility is a script that resides in /opt/tn3270/bin, and can be modified to not run **cleostop_tn** automatically and/or only run selected tn3270/tn5250 emulators.
2. The **cleostop_tn** utility can be used to stop all tn3270/tn5250 emulator processes that are running. The utility makes sure that all tn3270/tn5250 emulator processes are killed and all the shared memory and semaphore resources they used, are released. Additionally, **cleostop_tn** kills the tn3270/tn5250 license daemon and release all the shared memory and semaphore resources the tn3270/tn5250 license daemon was using. Then the tn3270/tn5250 license daemon is restarted. This insures that the tn3270/tn5250 licensed LU count is not compromised.

Appendix B – Host Configuration Information

Required Configuration Information:

Before you begin the installation and configuration process, contact your host personnel and get the following critical information about your connection.

Much of this information can be found in the TNSERVER Configuration or the NCP Gen on your mainframe host.

TN3270/TN5250 Connection

If you are Planning to establish a TN3270(E)/TN5250 (TCP/IP) connection to your mainframe host please provide the following information:

IP address of the Mainframe host or TNSERVER

_____ - _____ - _____ - _____ and Port Number _____

OR

DNS Name of the Mainframe host or TNSERVER

_____ and Port Number _____

What Operating System is the TNSERVER running on? _____

What hardware platform is the TNSERVER running on? _____
(Make, Model, CPU Speed, Memory)

How many total LUs will be used? _____

How many TNSERVER/HOST Connections will you be using? _____

How many of the total LUs will be used with TN3270 Protocol? _____

How many of the total LUs will be used with TN5250 Protocol? _____

Does the TNSERVER support TN3270 or TN3270E? _____

If the TNSERVER supports TN3270E, which of the Extensions will you be using?

1. Printing Y/N? _____
2. SYS REQ key Y/N? _____
3. Specific LU Names, instead of requesting LUs from a poll Y/N? _____

Does the TNSERVER support TN5250 or TN5250E? _____

If you will be using TN5250, what Device Type will the TNSERVER expect you to use?

If your TNSERVER supports TN3270E, then you may encounter a problem with SSCP screens from the TNSERVER/HOST.

Some TNSERVER/HOST configurations mishandle the Extended TN3270 mode. In Extended TN3270 mode, all SSCP data should be sent to the TN3270 client "UNFORMATTED".

If the SSCP data is, incorrectly, sent "FORMATTED"

then the SSCP screen may exhibit one or more of the following problems:

The screen will not look identical to the way it would have displayed if SNA connectivity was being used previously.

You may not be able to input data to the "FORMATTED" SSCP screen.

If either of the 2 problems above occur, there are alternatives to work around the problems.

Do not use the Extended TN3270 mode by giving up any of the extensions you planned on using. This will result in TN3270 SSCP screens being identical to SNA SSCP screens.

Continue to use any TN3270 Extensions with the caveat that you may have to modify any HLLAPI programs that you have written using SNA, since the TN3270 screens may be different.

System Information

What Operating System will you be running your Cleo software on?

AIX SCO SOLARIS UnixWare Redhat Linux

What is the version of the operating system? _____

What hardware platform will the Cleo software be running on? _____

What version of Cleo Software will you be loading? _____

Is this a new install or an Upgrade? _____

What Ethernet Communication adapter card will you be using?

Please provide diagram of the connection from the mainframe host to your network.
Include as much detail as possible.

Appendix C – Trouble Shooting Information

1. The **/var/opt/tn3270** directory contains TN3270/TN5250 error and audit text files. Specifically:
 - com.err** - Contains any error messages that occur dealing with the connection to the TNSERVER/HOST, system resources, TN3270/TN5250 protocol violations, host application errors
 - com.aud** - Contains audit information dealing with the connection to the TNSERVER/HOST and status of individual LUs.
2. In order to increase the details collected in the audit file, com.aud, the TN3270/TN5250 text configuration files can be modified to uncomment the line that looks like this
; audit
by removing the “;” (semicolon) in front of the work “audit”. See 4. below for an explanation of where the TN3270/TN5250 text configuration files reside.
3. When problems occur in establishing a connection to a TNSERVER/HOST, tn3270/tn5250 status line errors appear, or HLLAPI application problems occur, it can be very useful to trace the actual TN3270/TN5250 TCP/IP protocol traffic between the TNSERVER/HOST and the Cleo emulation software running on the Linux system.

The TCP/IP protocol traffic can be gathered as text files containing hexadecimal data that flow between the TNSERVER/HOST and tn3270/tn5250 emulator.

If the environment variable

SNAMSG

is set before the tn3270/tn5250 emulator is invoked, TCP/IP protocol traffic will be gathered in the files specified in the **SNAMSG** environment variable. The **SNAMSG** environment variable should be set to define a pair of text files to gather TCP/IP protocol traffic in. The pair of files ping pong up to a size of 1 MB each.

For example

```
SNAMSG=/var/opt/tn3270/msg1:/var/opt/tn3270/msg2:A;export SNAMSG  
/opt/tn3270/bin/tn3270 -s /etc/opt/tn3270/tn3270-1.stu -h -0x2
```

will place TCP/IP protocol data in the msg1 and msg2 files when the tn3270/tn5250 emulator is invoked by the **“/opt/tn3270/bin/tn3270”** command.

When the “**tnconfig**” utility script is run, commented out lines are automatically placed in the TN3270/TN5250 script file(**/opt/tn3270/bin/tnstart**) that is run by the “**cleostart_tn**” script. The commented out lines occur before each invocation of the tn3270/tn5250 emulator. The files used to collect the TCP/IP protocol traffic reside in the directory

/var/opt/tn3270

The pair of files used for the 1st invocation of the tn3270/tn5250 emulators in the **/opt/tn3270/bin/tnstart** script is “**msg1**” and “**msg2**”, then “**msg3**” and “**msg4**” are used for the 2nd invocation of the tn3270/tn5250 emulator in the **/opt/tn3270/bin/tnstart** script is “**msg3**” and “**msg4**”, etc.

By uncommenting out the lines in the **/opt/tn3270/bin/tnstart** script, protocol traffic for all invocations of the tn3270/tn5250 emulators can be gathered.

4. The “**tnconfig**” script can be used to automatically create tn3270/tn5250 text configuration files. These configuration files reside in the directory:

/etc/opt/tn3270

as the files

/etc/opt/tn3270/tn3270-1a.txt

Configuration file definition for each invocation of the tn3270/tn5250 emulator containing 10 LUs for the first Host Connection.

/etc/opt/tn3270/tn3270-1b.txt

Configuration file definition for the last invocation of the tn3270/tn5250 emulator containing less than 10 LUs for the first Host Connection.

/etc/opt/tn3270/tn3270-2a.txt

Configuration file definition for each invocation of the tn3270/tn5250 emulator containing 10 LUs for the 2nd Host Connection.

/etc/opt/tn3270/tn3270-2b.txt

Configuration file definition for the last invocation of the tn3270/tn5250 emulator containing less than 10 LUs for the 2nd Host Connection.

...

5. The “**tnconfig**” script also creates the script **/opt/tn3270/bin/tnstart** that contains commands to compile each tn3270/tn5250 text configuration file and

then invoke the tn3270/tn5250 emulator to run in the background for the total number of LUs specified when the “**tnconfig**” script was run.

6. The “**cleostart_tn**” script can be used to invoke tn3270/tn5250 emulators for all of the LUs specified when the “**tnconfig**” script was run.
7. The “**cleostop_tn**” script can be used to stop all the running tn3270/tn5250 emulators.

Appendix D – TNCONFIG

TNCONFIG

The ***tnconfig*** command has the following options:
[-T **TERMTYPE**]

Optional parameter to specify a TN3270 Terminal Type to use. This sets the Environment Variable `OVERRIDE_TN3270_TERM` to the value of **TERMTYPE**.

[-NE]

Optional parameter to override the default of using TN3270 Extentions Mode.

If **-NE** is specified, then negotiations with TN SERVERS will not use TN3270 Extentions.

-h hostname1,hostname2,...,hostnamen

Mandatory parameter.

Each comma separated argument is an /etc/hosts entry or DNS name entry that points to a TNSERVER.

There must be a corresponding **-n** argument for each **-h** Argument.

-n number lus for hostname1,number lus for hostname2,...,number of lus for hostnamen

Mandatory parameter.

Each comma separated argument is the number of LUs to use for the corresponding **-h** argument.

[-l 3270specificLUname1,3270specificLUname2,..., 3270specificLUnamen]

Optional parameter.

Each comma separated argument is a specific LU name for TN3270. There will be an entry for every LU on every host/TNSERVER connection.

[-t seconds]

WHERE: *seconds* is the number of seconds to delay before trying to re-connect an LU, when a host connection fails.

The environment variable

SNA3270_RETRY_TIME

is set to the value of the *seconds* argument.

Optional parameter. 5 seconds is the default value.

The environment variable

SNA3270_RETRY_TIME

is set to the value of the *seconds* argument.

[-a seconds]

WHERE: *seconds* is the number of seconds to use for DIP HLLAPI no-response from emulator failure value

Optional parameter. 1 second is the default value.

[-ssl 3|2]

Optional parameter.

Where 3 specifies to use Version 3.0 of SSL to negotiate the SSL connection to the TNSERVER.

Where 2 specifies to use Version 2.0 of SSL to negotiate the SSL connection to the TNSERVER.

If the **-ssl** parameter is **NOT SPECIFIED**, then SSL will not be used to connect to the TNSERVER.

[-cm RLE|ZLIB]**Optional parameter.**

Where **RLE** specifies to use RLE type SSL compression.

Where **ZLIB** specifies to use ZLIB type SSL compression.

[-cc PATHTOCLIENTCERTIFICATEFILE]**Optional parameter.**

The specific path and file name of the Client SSL Certificate File must be specified. The File must be in "**Privacy Enhanced Mail**" format. This certificate file will be used when negotiating a SSL connection to the TNSERVER.

[-ck PATHTOCLIENTKEYFILE]**Optional parameter.**

The specific path and file name of the File that contains the KEY to the Client SSL Certificate.

The KEY File must be in "**Privacy Enhanced Mail**" format.

This KEY File will be used when the SSL Certificate is accessed, during the negotiation of a SSL connection to the TNSERVER.

[-cp PATHTOKEYFILEPASSWORDFILE]**Optional parameter.**

The specific path and file name of the File that contains the password needed to access the SSL KEY file.

The password in the KEY File Password File is used when the KEY File is accessed, during the negotiation of a SSL connection to the TNSERVER.