3770Link SNA/RJE Emulation

Demo Version User's Guide

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<u>Notational Conventions</u>

The following notation is used in this guide:

3770Link   Refers to the 3770Link package in general.

3770Link GUI   Refers specifically to the graphical user interface
                 program ("3770link.exe")

3770Link SO   Refers specifically to the console style script-only
                 program ("3770so.exe")

3770Link Demo Version User's Guide

Thank you for requesting the 3770Link demo diskette. This demo introduces you to the "look-and-feel" of 3770Link and to the extensive script file capabilities found within. The demo *simulates* online sessions and therefore does not require an adapter or modem to be present in your system.

Install the demo by following the instructions below and take 3770Link for a test drive. Remember you're running the full-blown product – only we've done little software "magic" that eliminates the need for the mainframe system to communicate with.

<u>Ordering Information</u>

To order 3770Link, call 800-634-3122 or 512-345-2211.

Technical Support

Once you've ordered 3770Link, Serengeti Systems provides technical support for as long as you use 3770Link at no additional cost to you. Support is available via the Internet from our web site or via e-mail, or by telephone.

- Access to Serengeti Technical Support is available from within the 3770Link GUI by way of your web browser or e-mail (assuming either or both of these are installed on the same PC as 3770Link.) Open the **Help** menu, click **Technical Support**, and follow the links to the Serengeti Web Page Technical Support or to access our support staff via e-mail.

- Visit the Serengeti Web Page (http://www.serengeti.com) directly and click on **Technical Support** to access our online technical database. You'll find answers to many of the most commonly asked questions at your fingertips.

- For fast response to your technical support issue, sum up your question or problem in writing and submit this via e-mail to Support@Serengeti.com. We'll respond to you by e-mail or a telephone call (if appropriate) as quickly as we can.

- If you cannot find the answers you're searching for online or you do not have e-mail access, you may call us at (512) 345-2211 and ask for technical support during our normal business hours of 9AM to 5PM Central Time Monday through Friday.

<u>Introduction to 3770Link</u>

3770Link combines full-featured SNA RJE communications with a comfortable user interface. You can use the intuitive menus for interactive operations or take advantage of the powerful script language and/or programmatic control for automated, unattended sessions.

3770Link's user interface utilizes menus, dialog boxes, and context sensitive help. There are no confusing, cryptic commands to remember. 3770Link's user interface allows you to interactively initiate a communication session with the host computer through menu options such as Connect or Auto Dial. Once connected, data can then be sent through menu options such as Send File or Send Logon; in interactive mode, incoming data is automatically received by 3770Link if the line is connected. To terminate an interactive session, the Disconnect menu option is used.

For automated operations and unattended sessions, 3770Link incorporates a powerful script language. 3770Link SO's script language commands automate the functions of 3770Link GUI's menus. There are commands for looping, branching, and error control. There's a command to run external processes, and others that provide the linkage for 3770Link client/server operation. Auto-dial, answer, and time activated commands are available. Later, after a script is run, you can review the results by viewing 3770Link's log file which contains all commands, messages, and command results.

For developers, script sessions can be invoked from and controlled by your application to integrate SNA RJE communications into your custom applications. For advanced applications, 3770Link can be configured as an SNA RJE server for your custom written client application.

3770Link Features

3770 Emulation Features
- IBM 3776/3777 Model 3 or Model 4 emulation (SNA Logical Unit type 1)
- LU–LU and SSCP–LU sessions
- Unlimited number of concurrent sessions
- Receive to console, printer, or disk file
- Automatic ASCII↔EBCDIC translation
- PDIR record recognition
- FMH 1 and FMH 3 support
- Data compression and expansion
- Expansion of compacted host data streams

Advanced Features
- Automatic server LU recognition
- Formatted (automatic) and unformatted logons
- Detailed log file with date and time stamps
- Automatic concatenation of transmitted files
- Automatic naming of received files
- Supports multiple configurations
- Transmission and reception of binary files
- Real-time session statistics
- Configurable ASCII↔EBCDIC translation tables

Script Language For Unattended Operation
- Execute scripts from the command line, batch files, parent process, or menu
- Execute external processes and evaluate results
- Accept commands from a client process
- Command line parameter substitution
- Call scripts from within scripts
- Time activated commands
- Branching and looping commands
- Extensive result codes and error testing

RJE Server Features
- Load 3770Link as an RJE server
- Submit commands to 3770Link from user-written client program via DDE interface

Supported Host Environments
- Host systems: POWER (DOS/VSE); JES2 and JES3 (MVS); other VTAM environments; and others
- Host connections: SDLC, X.25, ISDN, Ethernet, token ring (or other server supported physical link)

3770Link System Requirements
- 486 or Pentium PC (or compatible)
- Windows 95/98 or Windows NT
- The client version of 3770Link requires one of the following:
  - Microsoft SNA Server 2.11 or later
  - IBM Communications Server for NT 5.0 or later
  - Novell Netware for SAA 3.0 or later

SSI SyncPlus SDLC Adapter (optional with 3770Link)
- 16-bit ISA bus adapter
- Includes software drivers for Microsoft SNA Server
- Link speeds up to 128Kbps (RS232C interface)
- Dual-channel DMA support; eight (8) IRQ settings
- Auto-dial with V.25bis and 'AT' command set modems (fully integrated with 3770Link)
- Auto-answer with most modems

Software Installation

The following steps describe how to install the 3770Link demo on a hard disk from the distribution diskette:

- Insert the 3770Link diskette into a floppy drive.

For Windows NT 3.51:

- From the File menu in Program Manager, choose Run. Type **a:setup** and press **<Enter>** or click **[OK]**.

For Windows 95/98 and NT 4.0:

- Choose the "Add/Remove Programs" option from the Control Panel.

  This runs the 3770Link demo installation program. This program is straight-forward and you just fill in the blanks.

- See the sections below on running 3770Link GUI and 3770Link SO.

Media and Files

The Windows 95, Windows 98, and Windows NT demo versions of 3770Link are shipped on a single diskette. The following files are copied to your hard drive when you install the demo:

3770LINK.EXE	3770Link GUI demo program
3770SO.EXE	3770Link SO demo program
SAMPLE1.S	Sample script file
SAMPLE2.S	Sample script file
CONNECT.S	Sample master connect script file
SERVER.S	Script file used to create a 3770 server
3770LINK.INI	Configuration file for this demo
FORMS.INI	Configuration file for this demo

RCVFILE.TXT   Text file for simulating received files
DLLSHARE.DLL   Windows dynamic link library
3770LINK.HLP   Help file

After you use 3770Link, you may also see the following files in your
3770Link directory:

JOBNAME.*   **printer** files created during demo
RECEIVE1.LOG   Log of files received
MRU.INI   Configuration file for this demo

Running 3770Link GUI and Simulating an Interactive Session

To execute the interactive version of 3770Link and see a simulated host
session in action, perform the following steps:

- Double click on the "3770Link Demo" icon to start the
  3770link.exe program.

- After an initial splash screen displaying information about
  3770Link, you should see a Logical Unit (LU) window for each
  configured LU. The LU windows are used to display information
  from 3770Link concerning commands which you have issued.
  Initially, the demo program comes configured with 3 LUs;
  namely, RJELU1, RJELU2, and RJELU3. In addition to the LU
  windows, you should also see one console window, which is used
  to display messages from the host computer.

- To connect to the host, use the mouse or keyboard to select the
  Session menu.

- Select the **Connect...** menu.

- Click on the **OK** button to begin the connection process on each
  LU. As the connection progresses, each LU window will display

text regarding the status of the connection. You should see the following text in each LU window during the connection process:

Activating Link To The Host ...
PU Is Active
LU Is Active => SSCP-LU Session Established
Sending Formatted Logon (INIT_SELF)
Session Bound
LU-LU Session Established

In addition, each LU window has a status bar which displays the current connection state of the LU. The status will change from **Disconnected**, to **System** and finally to **User** as the connection completes.

- When the connection completes, you will see the following welcome message in the console window:

LOGON TO DEMO HOST SUCCESSFUL

SIMULATED DOWNLOAD FROM HOST
WILL BEGIN IN 5 SECONDS.

- After 5 seconds, the first configured LU (RJELU1) will begin to receive a printer file from the host, and the following text will be displayed in the RJELU1 window:

Printer Active ...
Receiving To: PRINTER.001
Output Redirected By JOBNAME Field To: JOBNAME.001

During the simulated download, the first pane of the status bar of the RJELU1 window will display **Printer Active**, and the second pane will display the number of records received.

When the simulated download completes, you should see the following message in the RJELU1 window:

Receive Complete, 131 Records Received

You should also see the following simulated host message in the console window:

DOWNLOAD COMPLETE ON RJELU1.

- At this point, feel free to try some of the other menus such as **Transmit | File**, **Transmit | Application Request**, **Transmit | Logoff**, and **Transmit | Logon**. Each time that the first LU logs on, the simulated download message will appear in the console window and then that LU will receive the simulated download from the host.

- When you are finished, select the **Session | Disconnect** menu to disconnect from the demo host and then choose **Session | Quit** to exit the program.

Running 3770Link SO and Simulating an Unattended Session

Due to the fact that unattended sessions are setup and behave differently depending on whether you will be using a single LU or multiple LUs, a demonstration of an unattended session using 3770Link SO is not included. However, we have included an icon which shows how 3770Link SO can be run in interactive mode to enter script commands from a command line type of interface. To run 3770Link SO in this manner, double click on the "3770Link Script Processor Demo" icon and try entering commands such as CONN, RCV, DISC, and QUIT.

If you are interested in learning about how you can use 3770Link for unattended sessions, consult the 3770Link help file and search for "master connect script" and "sample script files".

Simulating Sending and Receiving Files with the Demo

For the purposes of this demo, the following rules apply when sending or receiving files:

- You may send a file at any time you are connected. A connection is achieved through the **Auto-Dial**, **Auto-Answer**, or **Connect** menus in 3770Link GUI, or through the DIAL, CONN, or ANS script commands in 3770Link SO.

- You will <u>automatically</u> receive a single file on the first configured LU after a brief pause each time that LU is logged on.   3770Link GUI is awaiting a transmission any time the line is connected, and is thus always ready to receive a file. With 3770Link SO, however, you must execute the RCV command in order to receive a file. The "rcvfile.txt" file included on the 3770Link diskette is used in the simulation of all received files.

Script Files

To accommodate unattended operation, 3770Link utilizes an extremely powerful script language.

There is a corresponding script command for most of the menu items available in interactive mode. In addition there are numerous commands to manage error checking, error recovery, looping, and branching.

Script files can be executed by specifying the **-s***filename* command line option of 3770Link SO or from the **File | Run Script** menu in **3770link** interactive mode. Additionally, you may use the -**u** switch with 3770Link SO to manually enter script commands from the keyboard.

Script files are produced with a text editor or word processor. Script files are assumed to have an extension of '.s'.

Script Commands

For a list of the commands understood by 3770Link's script processor and valid command line options, see the back of this guide.

Sample Script Files

The simple LU script file shown below attempts to connect up to three times, defines the **printer** to be a file named "testptr", and sends a file named "jcl.txt". If the send file completes normally, the script waits for a single file from the host and then disconnects and exits. This script file example assumes that a single LU is configured for the current connection and that automatic logon (INIT_SELF) has been enabled and configured for the single LU specified for this connection.

```
LOOPCOUNT  3
:conn_loop
CONN
```

```
IF  conn_loop,  connect
QUIT
:connect
PTR  testptr
SEND  jcl.txt
IF  sendfail
RCV
:sendfail
DISC
QUIT
```

This example LU script file dials a phone number and checks for numerous possible result codes. If the dial is successful, two files are transmitted consecutively and a RCV is executed to await the host's reply. The line is then disconnected. This script file example also assumes that a single LU is configured for the current connection and that the INIT_SELF has been enabled and configured for the single LU specified for this connection.

```
:top
DIAL  1-512-555-1212
;; Check for busy signal.
IFERROR=  1055  top
;; Check for no dial tone.
IFERROR=  1056  no_tone
;; Other dial error occurred.
IFERROR  exit
;; Send two files in a row.
SEND  jcl.1
;; Check for any error.
IFERROR  exit
SEND  jcl.2
;; Define auto-naming printer file.
PTR  newdata  /n
;; Wait for host reply.
RCV
:exit
DISC
QUIT
```

> **:no_tone**
> **##ATTENTION: Phone Line Not Connected**
> **QUIT**

This example master connect script file connects on all 3 configured LUs (RJELINK1, RJELINK2, and RJELINK3). The line is then disconnected. This script file example assumes that the 3 LUs are configured for the current connection.

> **;Connect on all 3 LUs.**
> **CONN**
> **;Start script file named "rjelink1.s" on LU named "RJELINK1".**
> **START_LU_SCRIPT rjelink1.s RJELINK1**
> **;Start script file named "rjelink2.s" on LU named "RJELINK2".**
> **START_LU_SCRIPT rjelink2.s RJELINK2**
> **;Start script file named "rjelink3.s" on LU named "RJELINK3".**
> **START_LU_SCRIPT rjelink3.s RJELINK3**
> **;Wait for all of the script files to complete.**
> **WAIT_FOR_LU_SCRIPTS RJELINK1 RJELINK2 RJELINK3**
> **;Disconnect on all 3 LUs.**
> **DISC**
> **;Quit 3770Link.**
> **QUIT**

Note that the script commands are not case sensitive. Your script files may mix upper and lower case characters freely.

3770Link Script Language

Commands are not case sensitive, they are shown in upper case for clarity. Replace text in italics with the appropriate values. Parameters enclosed in square braces "[ ]"are optional. When two or more parameters are separated by a bar "|", only one of them may actually be used at a time.

Command Syntax	Description
; [*comment*]	Ignore *comment* line.
# [*comment*]	Ignore *comment* line.
:*label*	Set *label* used for branching and looping.
%*n*	Replace %*n* with *n*th parameter specified.
%lastfile%	Replace %lastfile% with name of last file received.
%copies%,%date%,%ddname%, %fcbname%,%forms%,%train%, %jobname%,%procstep%,%time%, %spinno%,%stepname%,%volio%	Replace with corresponding PDIR field.
ANS [/t=*x* | /m=*x*]	Wait for incoming call then auto answer. /t=*x* - Time-out after *x* seconds. /m=*x* - Time-out after *x* minutes.
APPEND *source_file dest_file*	Append *source_file* to *dest_file.*
APPREQ *request*	Send *request* as an application request to the host.
CALL *scriptfile*	Execute *scriptfile* and return upon completion.
CHAIN *scriptfile*	Transfer control to *scriptfile.*
COMPRESS /on | /off	Turn compression on or off during send.
CONN [/t=*x* | /m=*x*]	Establish a direct connection. /t=*x* - Time-out after *x* seconds. /m=*x* - Time-out after *x* minutes.
COPY *source_file dest_file*	Copy *source_file* to *dest_file.*
DEBUG /on | /off	Turn debugging on or off.
DEL *filename*	Delete *filename.*

Command Syntax	Description
DIAL *xxx-xxx-xxxx* [/t=*x* | /m=*x*]	Auto-dial string *xxx-xxx-xxxx*. /t=*x* - Time-out after *x* seconds. /m=*x* - Time-out after *x* minutes.
DISC	Disconnect the line.
ENDPIPE	Close a pipe.
EXCH *name* [/n | /s] [/a] [/b] [/t]	Define the exchange device. /n, /s, /a, /b, /t - See PTR command.

EXEC [/c] [/e] *filename* [*args*]	Execute *filename* with given *arguments.*
	/c - Clear the screen before and after
	    execution.
	/e - Pass the last return code as the 1st
	    argument.

FORM *formname*	Set form values from pre-defined *formname.*

FORM pl=*x* tm=*x* bm=*x* lm=*x*
    rm=*x* ch2=*x* ch3=*x*
    ch4=*x* ch5=*x* ch6=*x*
    ch7=*x* ch8=*x* ch9=*x*
    ch10=*x* ch11=*x* ch12=*x*
    ff=[y | n] dtf=[y | n]
	Set form values as specified:
	pl=*x* - Set page length to *x.*
	tm=*x* - Set top margin to *x.*
	bm=*x* - Set bottom margin to *x.*
	lm=*x* - Set left margin to *x.*
	rm=*x* - Set right margin to *x.*
	ch*y*=*x* - Set channel *y* to *x.*
	ff=*x* - Decode form feeds (y or n).
	dtf=*x* - Delete top of form (y or n).

GOTO *label*	Branch to *label.*
HOST_FORM /on | /off	Turn host form specification via FCBNAME on or off.

HOST_NAMING /o | /f | /j | /e	/o - Disable host naming of received file.
	/f - Allow FORMS field to name received file.
	/j - Allow JOBNAME field to name received
	    file.
	/e - Allow either JOBNAME or FORMS field
	    to name received file, with JOBNAME
	    having priority.

IF *label1*[, *label2*]	If error, loop to *label1* until LOOPCOUNT exceeded. If no error, branch to *label2.*
IFERROR *label*	If error, branch to *label.*
IFERROR= *nnnn label*	If error code equal to *nnnn*, branch to *label.*
IFERROR> *nnnn label*	If error code greater then *nnnn*, branch to *label.*

Command Syntax	Description
IFERROR< *nnnn label*	If error code less than *nnnn*, branch to *label.*
IFERROR>= *nnnn label*	If error code greater than or equal to *nnnn*, branch to *label.*
IFERROR<= *nnnn label*	If error code less than or equal to *nnnn*, branch to *label.*
IFERROR!= *nnnn label*	If error code not equal to *nnnn*, branch to *label.*
IFFILE *filename label*	If *filename* exists, branch to *label.*
IFNFILE *filename label*	If *filename* does not exist, branch to *label.*
LOG /on | /off	Turn logging on or off.
LOGON [*message*]	Send *logon* message to the host.
LOGOFF [*message*]	Send *logoff* message to the host.
LOOP *label*	Loop to *label* until LOOPCOUNT exceeded.
LOOPCOUNT *x*	Set loop count for LOOP and IF loops.
PAUSE *hh:mm*	Suspend session until *hh:mm* (military time).
PAUSE +*x*	Suspend session for *x* seconds.
PIPE [*pipename*] [/t=*x* | /m=*x*]	Create a pipe. /t=*x* - Time-out after *x* seconds. /m=*x* - Time-out after *x* minutes.
PRINT *file ptr*	Print *file* to *ptr.*
PTR *name* [/n | /s] [/a] [/b] [/t]	Define the printer device. /n - Use auto file naming. /s - Use auto file naming, skip existing files. /a - Append to existing file. /b - Receive in binary mode. /t - Don't translate transparent records to ASCII.
PUN *name* [/n | /s] [/a] [/b] [/t]	Define the punch device. /n, /s, /a, /b, /t - See PTR command.
QUIT [/f] [/x=*nn*]	Exit script processing. /f - Terminate I/O and force disconnect. /x=*nn* - Return exit code *nn.*

Command Syntax	Description
RCV [/t=*x*	/m=*x*] [/PTR[*n*]	/PUN[*n*]	/EXCH[*n*]]	Wait to receive a single transmission from the host. /t=*x* - Time-out after *x* seconds. /m=*x* - Time-out after *x* minutes. /PTR[*n*], /PUN[*n*], /EXCH[*n*] - Receive only printer, punch or exchange files on subaddress *n*.
RCV_FC /d	/i	/d - Decode format control characters during receive. /i - Ignore format control characters during receive.
RCV_IRS /c	/s	/i	/c - Convert IRS characters to CR-LFs during receive. /s - Strip (remove) IRS characters during receive. /i - Ignore IRS characters during receive.
RCV_PAD /on	/off	Turn record padding on or off during receive.
RCVM [/t=*x*	/m=*x*] [/PTR[*n*]	/PUN[*n*]	/EXCH[*n*]]	Wait to receive at least 1 transmission from the host. /t=*x* - Time-out after *x* seconds. /m=*x* - Time-out after *x* minutes. /PTR[*n*], /PUN[*n*], /EXCH[*n*] - Receive only printer, punch or exchange files on subaddress *n*.
RDRRL *xxx*	Set reader record length.
RENAME *filename1 filename2*	Rename *filename1* to *filename2.*

SEND [[b]	[j]	[p]]*file*
		    [+[[b]
			[j]	[p]]*file*...]
				    [&[[b]
					[j]	[p]]*file*...]
						    [[/p
							/j]	/b]	Send single or multiple files.
									+ - Send files as multiple files.
									& - Send files as one file.
									/p, [p] - Pad each record with spaces.
									/b, [b] - Transmit in binary mode.
									/j, [j] - Scan for include records.

SEND_IRS /c	/s	/i	/c - Convert CR-LFs to IRS characters during send. /s - Strip (remove) CR-LFs during send. /i - Ignore CR-LFs during send.
SEND_PAD /on	/off	Turn record padding on or off during send.
SIGNAL [*msg*] [/t=*x*] [/a]	Write to a pipe. /t - Time-out after *x* seconds. /a - Do not wait for reply.

Command Syntax	Description
START_LU_SCRIPT *file* [*luname*]	Start LU script *file* execution on *luname.*
SUBMIT *file* [[/p	/j]	/b] [/t=*x*	/m=*x*]	Wait for existence of *file*, then send *file* to the host. /p - Pad each record with spaces. /b - Transmit in binary mode. /j - Scan *file* for include records. /d - Delete *file* regardless of success. /t=*x* - Time-out after *x* seconds. /m=*x* - Time-out after *x* minutes.
SYSREQ *request*	Send *request* as a system request to the host.
WAIT_FOR_LU_SCRIPTS *luname(s)*	Wait for *luname(s)* to complete script(s).
WAITSIG [/t=*x*] [/a]	Reads & executes a command from a pipe. /t - Time-out after *x* seconds. /a - Do not wait for a reply.

Command Line Options

3770link   **[-d[*size*]] [-f*file*] [-l] [-r*size*] [-t]**
3770so   **-s*file* | -u [-d[*size*]] [-f*file*] [-q] [-r*size*] [-t]**
              [&*sub-parm*& | %*sub-parm*%]

Option	Description
-d	Write debug information to debug file
-d *size*	Write debug information to debug file with a maximum file size (in K bytes) of *size*.
-f *file*	Specify path and/or name of "modems.ini" file
-l	Activate default log file "*luname*.log"
-q	Run in quiet mode
-r *size*	Set maximum receive log file size to *size* K bytes
-s *file*	Load and execute script *file*
-t	Improve transmission speed
-u	Run 3770Link SO in interactive command mode
**&*sub-parm*&	%*sub-parm*%**	Pass substitution parameters to script file