



SNA Host Simulation System

QuikStart

Applied Computer Technology

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Preface

This manual provides a QuikStart for the installation and operation of the SNA Host Simulation System (SNAsim™).

Organization of this Document

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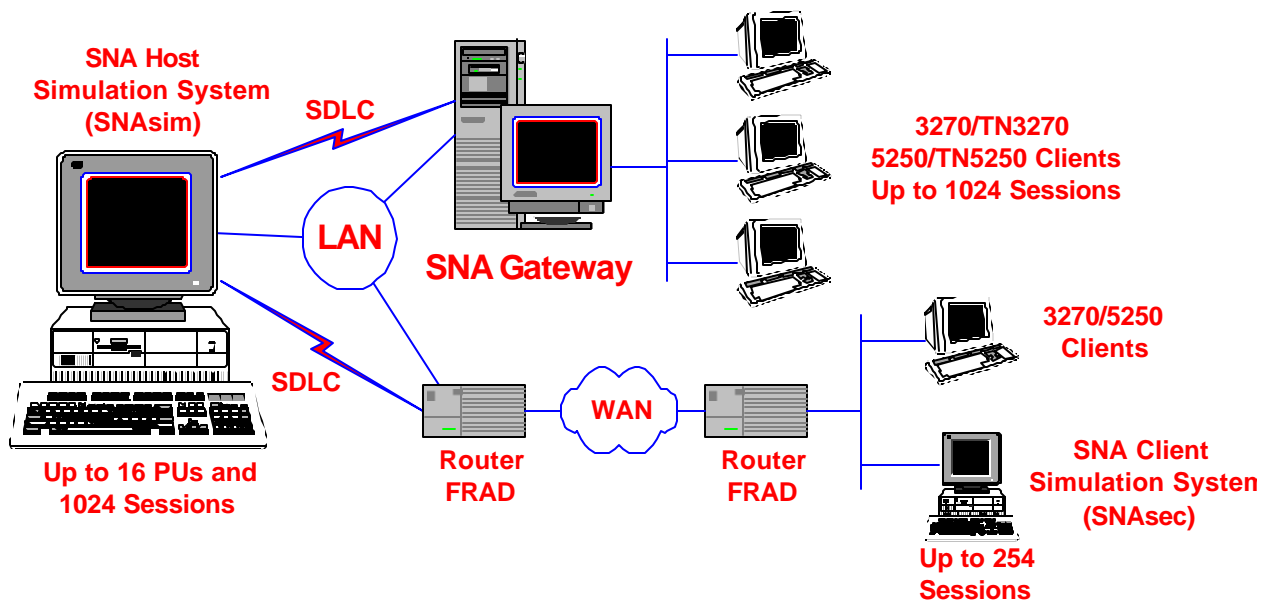
Welcome to SNAsim

Welcome and thank you for choosing SNAsim, the easiest and most powerful way to conduct conformance/validation, load/stress, and performance testing of SNA 3270 and 5250 products from your desktop PC!

What is SNAsim?

The SNA Host Simulation System (SNAsim™) is a PC-based environment for simulating the 3270 and 5250 data streams produced by IBM Mainframes using SDLC, Token Ring, and Ethernet connections. Ready-to-run tests are provided for protocol conformance, functionality, load/stress, and host application emulation. A scripting facility is available to create additional tests. SNAsim is available in the following configurations:

- **INTRO** - 1 PU and 1 LU
- **STD (STANDARD)** - 1 PU and 64 LUs
- **LITE** - 1 PU and 4 LUs
- **PRO** - 16 PUs and 1024 LUs



SNAsim provides an economical but powerful tool for use by:

- **End-Users** - Compare products/releases and test installation/setup
- **OEMs** - Perform limited testing and generate "life-like" SNA traffic
- **Marketing** - Provide portable live SNA Host demos
- **Resellers/Integrators** - Provide live demos and test equipment configuration and setup
- **Training** - Provide "live" classroom demos and protocol study
- **Manufacturing** - Test equipment prior to shipment with live data
- **Service** - Use for testing and repair without a "host"

By using data provided by the protocol verification tests, 3270 and 5250 products can be easily evaluated and compared and new releases can be compared with previous versions.

The functionality tests verify operation of 3270 and 5250 features and can be used to validate new equipment or software installations to insure they operate properly before they are added to production networks. Troubleshooting of existing systems is simple using functionality tests, and the risk of crashing the “production host system” while performing problem determination can be avoided.

The load/stress tests provide integrated reports containing: bits/second, packets/second, transactions/second and response time, eliminating the troublesome and error prone need to use external monitoring systems or line monitors for performance results. SNAsim can be used to evaluate the performance of single or multiple LUs and single or multiple PUs. SNAsim can also be used to evaluate the performance of gateways, routers, FRADs, or other intermediate network components - as well as measure the end-to-end performance of a complex network.

- **Avoid expensive downtime** by stress-testing your network before and after you make changes.
- **Identify performance capacities and bottlenecks** by stressing components to their limits.
- **Identify problem sources** by determining whether the problem is due to the network or incorrect configuration before running with the production network.
- **Simple and easy to use** , SNAsim can be installed and running its first test within five minutes.

SNAsim - SNA Host Simulation System	INTRO	LITE	STD	PRO
Pricing	FREE	\$995	\$3,995	\$6,995
Capacity	1 PU	1 PU	1 PU	16 PUs
	1 LU	4 LUs	64 LUs	1,024 LUs
SNA Client Simulation System (SNAsec)				
Secondary 3270 (1 PU, 254 Sessions)				
			X	X
Tools				
LLCPing	X	X	X	X
BIND Changer		X	X	X
SNA Client Simulation System (SNAsec)			X	X
Script Facility				X
LLC Route Information Field (RIF) Override				X
Screen Builder (SCRNBLDR)				X
SNA Protocol Conformance				
SDLC Contract/Discontact Exerciser		X	X	X
LAN Reconnect Exerciser		X	X	X
Data Link Control			X	X
Path Control			X	X
Transmission Control			X	X
Session Control			X	X
Data Flow Control			X	X
LU2 DSC Commands				X
LU2 Outbound Buffer Control				X
3270 Display Functionality				
Mixed Display Attributes	X	X	X	X
Control/PF Keys	X	X	X	X
Basic Character/Attributes	X	X	X	X
Repeat to Address		X	X	X
Code Page Character Set		X	X	X
Extended Attributes I		X	X	X
Tile ACT Logo [mlu]		X	X	X
Host Application Emulation		X	X	X
Extended Attributes III		X	X	X
Host Application Demos			X	X
Large Screen E-Alignment Pattern			X	X
LU2 Query			X	X
Test Patterns to Displays/Printers with Remote Operation			X	X
Large RU E-Alignment Mixed Display Attributes			X	X
Extended Attribute Modification			X	X
Send Variable Size File with DR1			X	X
Send Variable Size File with EXR			X	X
Receive Variable Size File			X	X
IVR Brokerage and Stock Market Quote Host Applications			X	X
Catalog Order Host Application			X	X
Send Variable Size File w/DR1 w/o Segmentation				X
Send Variable Size File w/EXR w/o Segmentation				X
Receive Variable Size File w/o File Dump				X
All Attributes				X
Extended Attributes II				X
Input Echo				X
VTAM Login - ACT Banking Applications [mlu]				X
Dynamic Multi-PU/LU Host Application Demos [mpu]				X

SNAsim - SNA Host Simulation System	INTRO	LITE	STD	PRO
3270 Performance [all mlu]				
Outbound with Sequential DR1		X	X	X
Short Data Stream Flooding			X	X
Long Data Stream with Program Tab			X	X
Outbound with Overlapped DR1			X	X
Read Modified Buffer Stress			X	X
LU2 State-Driven Endurance			X	X
Multi-PU/LU Small Block Outbound with EXR [mpu]				X
Multi-PU/LU Read Buffer Inbound [mpu]				X
Compression BIND Support				X
Uncompressed, Chained Employee Transaction with Overlapped DR1				X
Compressed, Chained Employee Transaction with Overlapped DR1				X
3270 Printer Functionality				
LU1 Printer		X	X	X
LU3 Printer		X	X	X
Advanced LU1 Printer			X	X
Basic LU1 Output with Pacing			X	X
LU3 All Print Out Formats			X	X
LU1 Print Orders				X
LU1 Extended Attributes				X
LU1 EBCDIC Character Set				X
LU3 Attributes				X
LU3 Extended Attributes				X
LU3 EBCDIC Character Set				X
5250 Display Functionality				
Mixed Display Attributes - Put Only	X	X	X	X
Control/PF Keys	X	X	X	X
Basic Character/Attributes	X	X	X	X
Displayable Characters		X	X	X
Extended Attributes I		X	X	X
Query Device			X	X
Input Field Format Verification (FFW)			X	X
All Attributes				X
Extended Attributes II				X
Input Field Control Verification (FCW)				X
5250 Banking Application				X
5250 Performance/Stress [all mlu]				
Outbound with Sequential Put Response		X	X	X
Sequential Heavy Outbound/Inbound (SS/RTS)			X	X
Overlapped Light Outbound/Inbound (R)				X
Overlapped Read Screen Inbound				X
5250 Printer Functionality				
5250 DSPT WSF Printer		X	X	X
Advanced 5250 DSPT WSF Printer			X	X
Print Orders			X	X
Extended Attributes				X
EBCDIC Character Set				X
Set Line Density				X

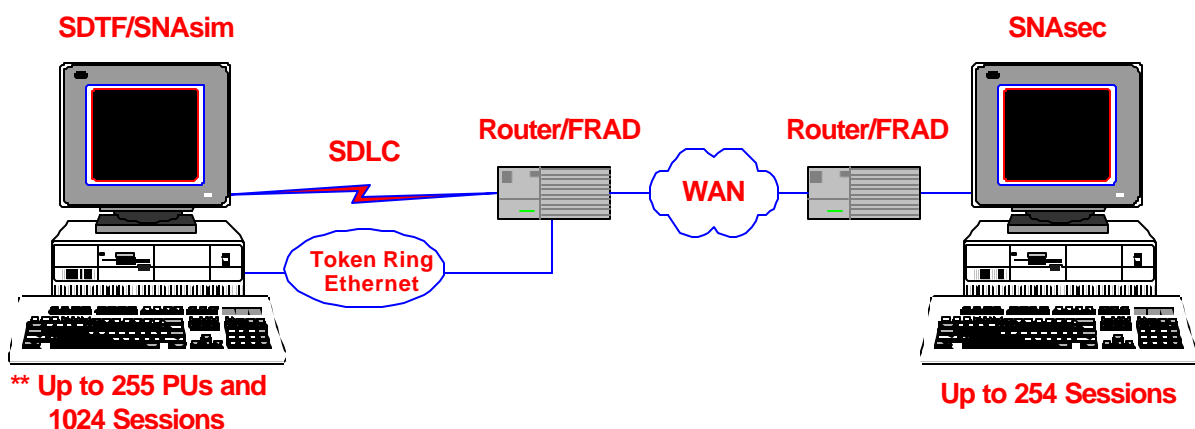
[mlu] - multiple logical units/sessions [mpu] - multiple physical units/controllers

SNAsim Features

- Ready-to-run conformance, functionality, and performance/stress tests.
- Performance/stress tests provide performance measurements ready for spreadsheet analysis.
- A buffer trace/log capability is provided for tracing the SDLC, LAN, or SNA level activity of the communications link in real time. Selected transmit and receive data may be displayed on the operator console, printed or recorded on disk.
- Extensive buffer logging with formatting is provided for the capture of selected data.
- Statistics are maintained by SNAsim and can be accessed by the test or displayed on the system console or log device.
- SNAsim tests LAN operation from the SNA Path Control Layer upward using the 802.2 LLC interface and SDLC operation from the DLC Layer.
- Easily reproducible test results.
- Support for up to 16 PUs and up to 1,024 sessions.

What is SNAsec?

The SNA Client Simulation System (SNAsec) is a specially modified version of the SNA Host Simulation System (SNAsim), which functions as a 3270 client (emulator) and supports up to 254 sessions. SNAsec is provided with the STD and PRO versions of SNAsim. The functions provided by SNAsec can be used with all 3270 test cases. SNAsec is a stand-alone program with the same hardware requirements as SDTF or SNAsim. SNAsec is located in the SECSFX.EXE self extracting exec file with SNAsim or is located in the \SDTF7\SNASEC subdirectory. Instructions for using SNAsec are the same as those for SNAsim and are contained in the SNASIM.PDF Acrobat file which can be viewed using the Acrobat reader.



- ** SDTF - supports up to 255 PUs and 1024 Sessions
- SNAsim - supports up to 16 PUs and 1024 Sessions

Note: SNAsec is supplied with the STANDARD and PRO Versions on SNAsim.

SNAsec responds as a 3270 emulator client which supports up to 254 LU2 or LU3 sessions. It supports the full functions of the SDLC or LAN protocols and 3270 commands such as EAU, EWA, RMA, and WSF. It supports SNA session deactivation and automatic link activation to re-establish connection to the host (SDTF or SNAsec).

It accepts the session startup commands from the host or host simulator (SDTF or SNAsim). It then receives data for each active LU, and sends appropriate responses back to the corresponding session when it receives 3270 read commands (RD, RM, RMA), SNA DR1 requests, and pacing requests for an active LU. The test will keep running until the operator presses a key to terminate it or it receives a Disconnect command from the host.

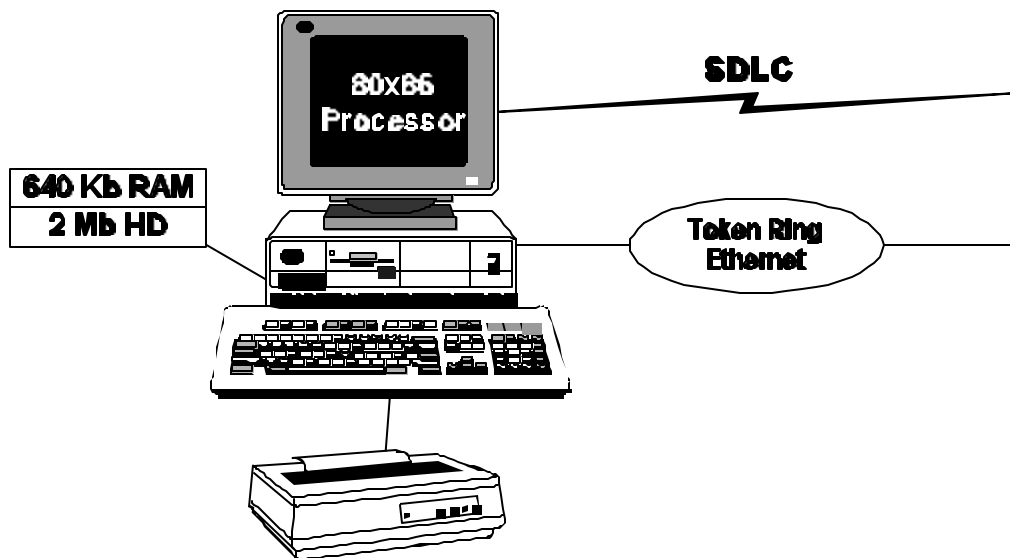
Note: The SDTF/SNAsim 3270 Performance Tests are the primary tests that communicate with SNAsec. The 3270 Performance Test Libraries can be found on the Library\By Category Submenu in SDTF and the Library\Pick List Submenu (DISPPERF Test Library) in SNAsim.

Chapter 1. SNAsim Installation and Operation

This chapter provides information pertaining to the installation and operation of the SNAsim system.

Hardware and Software Requirements

SNAsim requires a PC that has 640 kilobytes of available memory to enable it to run DOS and SNAsim. A general functional schematic of the hardware required is shown below:



SNAsim Hardware Components

Hardware Requirements

80x86 Microprocessor

The 80x86 is the microprocessor type supported for this implementation. Parts of the SNAsim software are written in 80x86 assembler language and are specific to the 80x86 processor family.

SDLC Communications

The 8273 SDLC protocol controller is a programmable device which provides formatting of data for serial data communications and is used by the IBM SDLC and Multi-protocol communications adapters. It is capable of handling SDLC synchronous bit-oriented protocol in both NRZ and NRZI modes and generates CRC codes. SNAsim uses the SDLC mode for communicating with the Implementation Under Test using either leased or dial-up communications facilities at speeds up to 57,600 bps.

SDLC Hardware Requirements

- IBM SDLC Adapter (Part # 76-H2750, 42H4332, 73G7099, 1501205, or 1502090) or MicroGate Digital Service Adapter (DSA) (Part #142003) for High Speed SDLC Communication
- Synchronous Modems or Modem Eliminator
- RS232 Cable, 25-Pin, Male/Female, for connection between PC/Laptop running SNAsim and Modem

LAN Communications

SNAsim can use Token Ring or Ethernet adapters to communicate with the Implementation Under Test.

Token Ring Hardware Requirements

- Token Ring Network Adapter with native or NDIS or 802.2 LLC Drivers
- A cable for attachment to a Token Ring Multiple Access Unit (MAU)

Ethernet Hardware Requirements

- Ethernet Network Adapter with NDIS Drivers
- A cable for attachment to an Ethernet Hub

Printer

The printer device is optional and is not required to operate the SNAsim system. It is included as one of the components because it may be used for hard copy output from the SNAsim log/trace functions.

A printer is recommended for hard copy logging and messages.

Software Requirements

SNAsim is a DOS application and can be run with DOS, Win98*, and WinNT/2000* (* run from the DOS box). The required drivers and supported protocols are shown below:

<u>OS</u>	<u>SDLC Driver</u>	<u>LAN Driver</u>
DOS 6.x	Internal	IBM LAN Support Program
Win98	Internal	MSDLC32 with NDIS adapter driver
WinNT/2000	—	DLC with NDIS adapter driver

SNAsim interfaces with the LAN at the 802.2 LLC level. SNAsim also accesses the direct and DLC interfaces to perform certain I/O operations with the adapter.

The DOS installation of SNAsim requires changes to AUTOEXEC.BAT and CONFIG.SYS. For more information, refer to the SDLC and LAN Testing Guidelines sections in this chapter.

Installation of SNAsim

1. Move the SNAsSFX.EXE file into the root directory (\\SNASIM is suggested).

Where “x” is dependent upon the version of SNAsim System purchased.

I	INTRO
L	LITE
S	STANDARD
P	PRO

2. Enter the following command from the C:\\SNASIM> prompt:

```
SNAsSFX < Enter >
```

3. The following files are located in the root directory of SNAsim.

Note: Depending upon the SNAsim System purchased, the files supplied may vary. A blank indicates the file is supplied with all versions.

<u>Filename</u>	<u>Version</u>	<u>Description</u>
ACT.INP	P	Script TSO Logon
ACTPU.INP	P	Script Send ACTPU
BANK.TXT	P	Banking Application Input Data
BINDLU1.DAT	P	LU1 Bind Data for Script Applications
BINDLU2.DAT	P	LU2 Bind Data for Script Applications
BINDLU3.DAT	P	LU3 Bind Data for Script Applications
CMDHELP.EXE		Command Line Startup Parameter Help
DISP3270.BAX	P	BATch eXecution File for Display Performance Tests
EXAMPLE.LOG		Example SNAsim Log/Trace File
FIELD.SCN	P	Screen Builder Field File
FILE.LST		This File
FIPRAC.INP	P	LU2 Script Tests Like Mixed Display Attributes
HELP.SCN	P	Screen Builder Help File
INFO.TXT		Information File
LAN.INI		LAN Initialization Options
LLCPING.EXE		LAN Connectivity and Performance Utility
LU1.INP	P	Script LU1 Printer Test
LU2.INP	P	Script LU2 Display Test
LU3.INP	P	Script LU2 Printer Test
NUMPKT.EXE	P	Trace Support Program
QUIKSTRT.PDF	I	SNAsim User's Guide in Acrobat Format
READ.ME		Read Me File
SCRNBldr.EXE	P	3270 Screen Builder Utility Program
SDLC.INI		SDLC Initialization Options File
SECSFX	SP	SNAssec Self Extracting Installation Files
SNASIM.CR	LSP	Customer Name, Serial Number File
SNASIM.EXE		SNAsim Executable
SNASIM.FAQ		Frequently Asked Questions
SNASIM.INI		Default Initialization Options
SNASIM.OVR		SNAsim Overlay
SNASIM.SYN		LAN Synonym Name MAC Address File
SNASIMDS.PDF	I	SNAsim Product Data Sheet in Acrobat Format
SNASINI.TXT		Description of Command Line Options
SNASLOGO.EXE		Logo Screen

SVIEWER.EXE		Log/Trace File Viewer
TRDETAIL.EXE	P	Trace Detail Decoder
TRSUM.EXE	P	Trace Summary Decoder
UTP.ADR	LSP	Multi-LU Configuration Files
UTP.DAF	LSP	Multi-LU Configuration Files
UTP.DF2	SP	Multi-LU Configuration Files
UTP.LAN	LSP	Multi-LU Configuration Files
VERSION.HST		Version History
WAITMSG.EXE		Waiting Screen During Trace File Loading

4. Please refer to the SDLC and LAN Testing Guidelines sections in this chapter for more information about running SDLC and LAN tests.

SDLC Testing Guidelines

1. Follow the instructions above to install the SNAsim software.
2. Change the directory to \SNASIM as shown below:

```
CD \SNASIM
```

3. Enter the following command from the DOS prompt to run SNAsim:

```
SNASIM SDLC <Enter>
```

Note: Windows 98 users should start SNAsim from the DOS box. SDLC is not available with Windows NT/2000.

4. Modify the following menu parameters (as required):

- A. Select the Library Menu and then the Name Submenu and type:

```
DISP3270 <Enter>
```

- B. Select the Configure Menu, and select the SDLC Options Submenu to set the correct SDLC address for the Implementation Under Test (IUT). If the address of the IUT is unknown, enter \$FF (broadcast). The default SDLC address is \$C1. Next choose either NRZ or NRZI Operation. The default is NRZ.

- C. Press Escape to return to the Configure Menu, and select the SNA Options Submenu. The DAF should be set to the Logical Unit number of the IUT. The default DAF value is \$02.

- D. Press Escape to return to the Configure Menu, and Save the .INI parameter file. The default is SDLC.INI.

5. Make sure that the SNAsim system and the IUT are connected and that the IUT has been powered on and is ready to communicate.
6. From the SNAsim Main Menu, select the "Run" Menu. Select the "From Menu" Submenu, and a list of all the available tests from the DISP3270 library will appear on the screen. Select test "001 Mixed Display Attributes" by cursoring to that line and pressing Enter. The IUT should display the following test pattern:

```
*** DISPLAY TEST ***
>.....< PROTECTED
> 123456789 < MODIFIED
ABCDEFGHIJ NON-PROTECTED
> < HIDDEN
> ... < NUMERIC          > <          CURSOR
```

The SNAsim console should display the message "Idle Poll Active, Press Any Key to Quit." The SNAsim system will continue with a slow poll until the operator exits by striking any key.

7. If the messages described above do not appear, check the connections and options carefully. Escape back to the Main Menu. Go to the Log/Trace Menu, and make the following changes:
 - Change the Type to SDLC
 - Change the Destination to File
 - Specify a Filename to contain the trace output

Run Test 001 again as described in Step 6. The data streams will be written to the file specified by Filename and can be analyzed later by either using the Display File Option (located under the Log/Trace Menu), Shelling or Quitting and viewing the trace file in a text editor. If problems still persist, contact Applied Computer Technology for further assistance.

LAN Testing Guidelines

SNAsim may be used to test either Token Ring or Ethernet Local Area Network attached IUTs using 802.2 LLC or NDIS Drivers.

1. Install the 802.2 LLC Drivers for DOS, Windows 98, or Windows NT/2000.
Note: Refer to the "Installing DOS 802.2 Drivers," "Installing Windows 98 802.2 Drivers," and "Installing Windows NT/2000 802.2 Drivers" sections beginning on page 12 for more information.
2. Follow the instructions outlined in the Installation of SNAsim section of this chapter to install the SNAsim software.
3. Change the directory to \SNASIM as shown below:

```
CD \SNASIM
```

The SNAsim synonym file, SNASIM.SYN, located in the directories described above, will need to be edited to include the LAN address of the Implementation Under Test (IUT). The first field of the SNASIM.SYN file is the 4 letter synonym for the IUT. The second field is the IUT's LAN address (12 hex digits). The third field is the IUT's SAP address (2 hex digits), which is optional. The SNAsim System will use the synonym entered to refer to the IUT. Example entries in the SNASIM.SYN file are shown below:

```
ALR2 10005A002862
486 10005A741EE3
```

4. Enter the following command from the DOS prompt to run SNAsim:

```
SNASIM LAN <Enter>
```

Note: Windows 98 and WinNT/2000 users should start SNAsim from the DOS box.

An SNAsim System running on a LAN will default to a work station address which does not exist and SNAsim will display the following errors:

```
S38 LAN Init Error 11 Retcode = 22
```

Note: The meaning of these return codes can be found in the LAN Support Program Technical Reference Manual.

After these errors occur, press Escape and strike any key to get to the SNAsim Main Menu.

- 5.. Modify the following menu parameters (as required):

- A. Select the Library Menu, then the Pick List Submenu and go to:

```
DISP3270
```

- B. Press Escape to return to the Main Menu, and select the Configure Menu. Choose the SNA Options Submenu. The DAF should be set to the Logical Unit number of the IUT. The default DAF value is \$02.

6. Steps necessary for LAN connection:

- A. Press Escape to return to the Main Menu, and select the Configure Menu followed by the LAN Options Submenu. Then choose Select Syn Name, and select the desired IUT.
- B. After the desired synonym name has been selected, Escape back to the Configure Menu, and Save the .INI parameter file. The default is LAN.INI.
- C. Make sure that the SNAsim system and the IUT are connected and that the IUT has been powered up and is ready to communicate. Select the Configure Menu and the LAN Options Submenu. Choose Reconnect To IUT to establish communications, or restart SNAsim as described in Step 4. You should see the following messages:

```
Making initial contact with ALR2 OK
```

- If the S38 message still appears, you still have not defined the IUT address properly. Recheck the SNASIM.SYN file. Also confirm that the IUT is configured with the LAN address used by SNAsim.
- If an S33 message appears, SNAsim has found the IUT, but the IUT is not running the proper communications program.

- Press Escape to return to the Main Menu, and select the Run Menu. Select the Run From Menu Submenu, and a list of all the available tests from the DISP3270 Library will appear on the screen. Select test "001 Mixed Display Attributes" by cursoring to that line and pressing Enter. The IUT should display the following test pattern:

```

*** DISPLAY TEST ***
>.....< PROTECTED
> 123456789 < MODIFIED
ABCDEFGHIJ NON-PROTECTED
> < HIDDEN
> ... < NUMERIC          > <          CURSOR

```

- If the IUT doesn't display the above pattern, check the connections and options carefully. Escape back to the Main Menu. Go to the Log/Trace Menu, and make the following changes:
 - Change the Type to LAN
 - Change the Destination to File
 - Specify a Filename to contain the trace output

Run Test 001 again as described in Step 8. The data streams will be written to the file specified by Filename and can be analyzed later by either using the Display File Option (located under the Log/Trace Menu), Shelling or Quitting and viewing the trace file in a text editor. If problems still persist, contact Applied Computer Technology for further assistance.

Installing DOS 802.2 Drivers

Note: The guidelines below are for using the LAN Support Program (LSP). Other equivalent drivers may also be used.

Install the LAN Support Program in a subdirectory called \LANMAN. The CONFIG.SYS, AUTOEXEC.BAT, and PROTOCOL.INI files will need to be modified as follows.

For **Token Ring Testing** modify the files as follows:

Add lines in your CONFIG.SYS file similar to the ones shown below:

CONFIG.SYS (Native)

```

DEVICE=\LSP\DXMA0MOD.SYS 001
DEVICE=\LSP\DXMC0MOD.SYS 4000AC140002,C800
DEVICE=\LSP\DXMT0MOD.SYS ST=6 S=12 ES=2 EST=7 C=12

```

CONFIG.SYS (NDIS)

```

DEVICE=\LSP\PROTMAN.DOS /I:C:\LSP
DEVICE=\LSP\IBMTOK.DOS
DEVICE=\LSP\DXMA0MOD.SYS 001
DEVICE=\LSP\DXME0MOD.SYS 4000AC140002,20,0

```

DEVICE=\LSP\DXMT0MOD.SYS ST=6 S=12 ES=2 EST=7 C=12 O=N
Add lines in your AUTOEXEC.BAT file similar to the ones shown below:

AUTOEXEC.BAT

\LSP\NETBIND

Add lines in your PROTOCOL.INI file similar to the ones shown below:

PROTOCOL.INI

```
; ----- Protocol Manager Definition -----
[PROTOCOL_MANAGER]
DriverName=PROTMAN$
; ----- Protocol Driver Definition -----
[DXME0_MOD]
DriverName=DXME0$
Bindings=TokenRing
[TokenRing]
DRIVERNAME=IBMTOK$
RAM=0xC800
NETADDRESS="4000AC140002"
```

For **Ethernet Testing** modify the files as follows:

Add lines in your CONFIG.SYS file similar to the ones shown below:

CONFIG.SYS

```
DEVICE=\LSP\PROTMAN.DOS /I:D:\LSP
DEVICE=\LSP\EXP16.DOS
DEVICE=\LSP\DXMA0MOD.SYS 001
DEVICE=\LSP\DXME0MOD.SYS 400000000486,,1
DEVICE=\LSP\DXMT0MOD.SYS O=N ES=2 EST=2 ANR=Y
```

Add lines in your AUTOEXEC.BAT file similar to the ones shown below:

AUTOEXEC.BAT

```
\LSP\NETBIND
DEVICE=C:\LANMAN\PROTMAN.EXE
DEVICE=C:\LANMAN\MACWD.DOS
DEVICE=C:\LANMAN\DXMA0MOD.SYS 001
DEVICE=C:\LANMAN\DXME0MOD.SYS 400000000001,,1
```

Add lines in your PROTOCOL.INI file similar to the ones shown below:

PROTOCOL.INI

```
;----- Protocol Manager Definition -----
[PROTOCOL_MANAGER]
    DriverName = PROTMAN$
; ----- IBM Ethernet Protocol Definition -----
[ETHERNET]
    DriverName = DXME0$
; ----- Bindings Statement -----
    Bindings = EXP16
; Intel EtherExpress(tm) 16 Ethernet Adapter
[EXP16]
    IOADDRESS = 0x300
    DRIVERNAME = EXP16$
```

Installing Windows 98 802.2 Drivers

1. Open windows control panel. Double click on Network.
2. Check the configuration panel for DLC protocol.
3. If it does not exist add the protocol.
Click on add and choose protocol
Select Microsoft and choose Microsoft 32 bit DLC*
Click on OK or press enter
- * If the Microsoft 32 bit DLC does not appear as an option, follow the steps below for Retrieving Microsoft DLC32 and begin again.
4. Verify that it is bound to the correct network board
Right click on network board and choose properties
Click on bindings tab and verify that DLC is checked
5. Configure MSDLC
CCB1 = 1
CCB Adapter Num = 0

Note: If you continue to have problems after following these steps, retrieve the latest MSDLC module from Microsoft, then try again.

Retrieving Microsoft DLC

1. Go to Microsoft's Web Site at <http://www.microsoft.com>
2. Click on the search box at the top of the page.
3. Type MSDLC32.EXE in the entry box and press enter.
4. Look for the Hyperlink that says Availability of MSDLC32 and Support Boundaries.
5. Look towards the bottom of the page for the MSDLC hyperlink.
6. Click on MSDLC32 hyperlink to download.
7. When the file is done downloading, go to windows explorer and double click on MSDLC32.EXE to expand.
8. Open the README.DOC in a word processor for instructions on installing the DLC module.

Note: MSDLC32.EXE is a self extracting zip file which contains more than one file. It is a good idea to save it to an empty directory so when it is extracted, you know which files to use.

Installation of MSDLC32

1. Create an installation disk or temporary directory on hard drive.
2. Run MSDLC32.EXE to extract files
3. Run - START-SETTINGS-CONTROL PANEL
4. Select Network Icon

5. Select ADD
6. Select PROTOCOL
7. Select HAVE DISK
8. Specify path to DLC directory or drive (from step 1)
9. Select OK
10. Select Protocol
11. Select Microsoft
12. Select "Microsoft 32-bit DLC"
13. The Installation utility will recopy the network files and copy over the DLC driver
14. Manually copy the DLC32.HLP and DLC32.CNT files to the WINROOT\HELP subdirectory (i.e. C:\WIN98\HELP)
15. Configure MSDLC
 CCB1 = 1
 CCB Adapter Num = 0
16. Reboot the machine.

Troubleshooting MSDLC

MSDLC32 includes a trace utility - TRCDLC.EXE. Run this utility to verify proper operation or to save a trace for future reference. The trace is logged to TRCDLC0.DAT and TRCDLC1.DAT. Trace Options:

TRCDLC -S:	Returns version number of DLC stack
TRCDLC -H:	Help for command line options
TRCDLC -C:	Closes trace utility from another DOS box

Installing Windows NT/2000 802.2 Drivers

1. Install the adapter NDIS drivers.
2. Install the DLC protocol.

Chapter 2. SNAsim INTRO Version - 3270 and 5250 Test Libraries

This chapter describes the files supplied with the SNA Host Simulation System (SNAsim) INTRO Version. A summary of changes in each release may be found in the VERSION.HST file. Any errors or discrepancies on system operation should be reported using the form located at <http://www.acomtech.com/techsupp.html>.

Note: For a complete description of the Test Libraries supplied with all other versions of SNAsim, please refer to Chapter 5. SNAsim Test Libraries of the SNAsim Host Simulation System User's Guide, contained on the CD-Rom.

This release of SNAsim will be installed under a user specified subdirectory (\SNASIM suggested). This version could require as much as 2 megabytes of free disk space.

DISP3270 Test Library

The 3270 Display test numbers and their functions are:

<u>Test#</u>	<u>Function</u>
001	Mixed Display Attributes
002	Control/PF Keys
003	Basic Character/Attributes

DSPT Test Library

The 5250 Display Station Pass-Thru test numbers and their functions are:

<u>Test#</u>	<u>Function</u>
001	Mixed Display Attributes - Put Only
002	Control/PF Keys
003	Basic Character/Attributes

Chapter 3. Expected IUT Results

This chapter shows the expected IUT results for both the 3270 and 5250 tests provided with the SNAsim INTRO Version.

Mixed Display Attributes (Put Only)

This test displays basic character attributes and test orders on the IUT console, similar to the ones shown below:

```
*** DISPLAY TEST ***
>.....< PROTECTED
> 123456789 < MODIFIED
ABCDEFGHIJ NON-PROTECTED
> < HIDDEN
> ... < NUMERIC          > <          CURSOR
```

This test exercises the Erase/Write command, along with the following attributes and orders:

Attributes

Protected
Non-Protected
Highlight
Hidden
Numeric
Modified

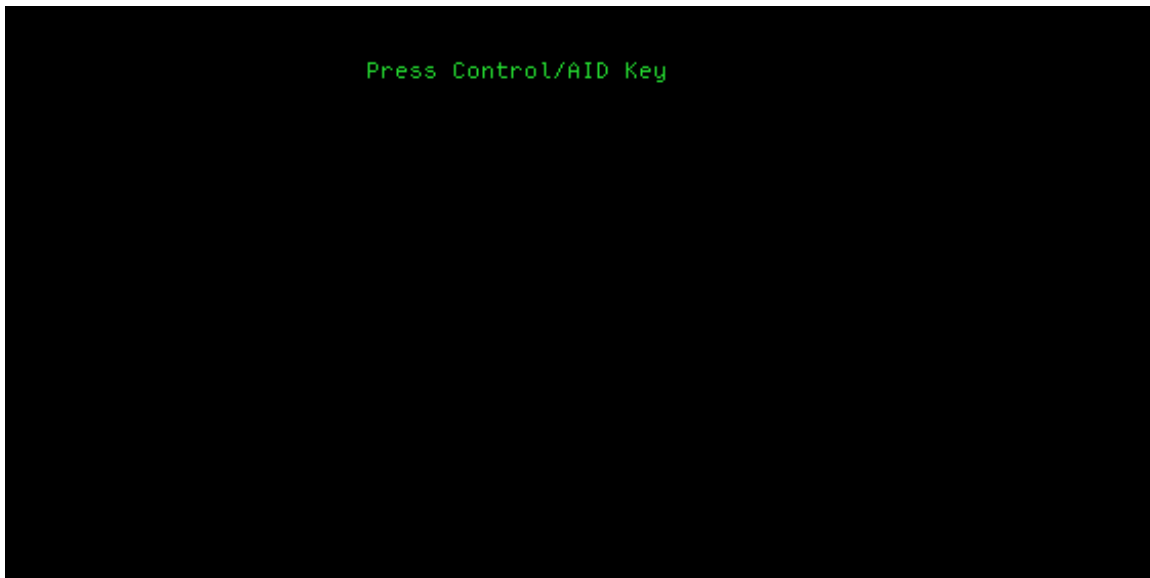
Orders

Erase Unprotected to Address (EUA)
Program Tab (PT)
Insert Cursor (IC)
Set Buffer Address (SBA)
Start Field (SF)
Repeat to Address (RA)

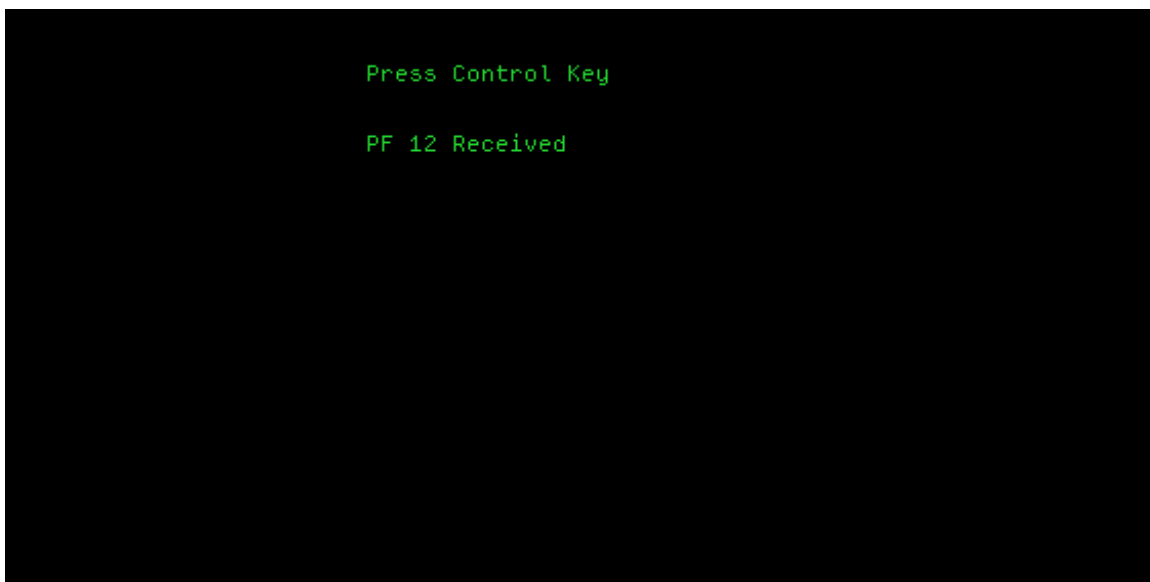
Control/PF Keys

This test displays PA and PF keys that are received by SNAsim. The keys received are displayed on the SNAsim console and echoed back to the IUT.

The initial screen that should appear is shown below:



The screen that should appear after pressing the PF12 key is shown below:



Basic Character/Attributes

This test displays a basic test pattern on the IUT and then asks the operator to test the functionality of the various fields. The display image should appear as shown below with the cursor located under the character C of COPY in the second row of displayed data. No indicators should be on.

```
ABCDEF GHIJKLMNOPQRSTUVWXYZ
COPY ABOVE IN THIS LINE   INSERT CK
|@#%&'()*_+!: "<?=-,;'/ 0123456789,.-A
COPY ABOVE IN THIS LINE
?SEL PEN TEST    >SEL PEN TEST        SEL PEN ATTENTION
```

3270 Operating Instructions

The operator should perform the following steps to complete the Basic Test Pattern check list:

1. Key in the row of alphabetic characters exactly as they appear in row 1 into row 2. All characters should enter correctly, and the cursor should move under "I" of INSERT.
2. Move the cursor under "C" of "CK" in the second row of displayed data using the -> (Right Arrow) key.
3. Press the INS MODE key. The INSERT MODE indicator should display.
4. Press the "A" key. The field should now appear ACK. If null, space processing is active.
5. Press the FIELD MARK key while holding the SHIFT key down. (Use the "B" key on the Operator Console keyboard.) The field should now appear A;CK (ABCK).
6. Press the "C" key. The data should not change, but the INPUT INHIBITED indicator should display in addition to the INSERT MODE indicator, which has remained on.
7. Press the RESET key. Both indicators should go out.
8. Press the DEL key. The "C" should disappear, and the field should now appear A;K (ABK).
9. Press the <-- key (New Line). The cursor should move under "C" character of COPY in the fourth row of displayed data.
10. Enter the special characters as they appear in row 3 into row 4, shifting where required. The cursor should appear under "0" character after the space bar is pressed.

11. Enter the digits "0" through "9" and the characters ",.-" and "A" as they appear in row 3 above. (On Data entry keyboards, use the "," over "*" and "." over "\$" keys to enter the "," and "." characters. Check with your supervisor if you're not sure which type of keyboard you have.) The following results should occur :
 - A. For Typewriter and Operator console keyboards without the Numeric Lock feature, all characters should enter.
 - B. For a Data Entry keyboard without the Numeric Lock feature, the characters ",." and "-." enter normally; however, the "A" character enters as the "<" symbol.
 - C. For all keyboards with Numeric Lock feature characters ".", "-." and "A" enter normally. (Use RESET and -> keys to move the cursor from those positions.)
 12. Check ^ (Up), v (Down), and <- (Backspace) cursor move keys for proper operation.
 13. Check the typematic function of the space bar or any other keys with typematic capability. Use the first field in the fourth row of displayed data for this step.
 14. Move the cursor under the first character displayed of the test message.
 15. Press any alphameric key. The INPUT INHIBITED indicator should display, the keyboard should lock, and the character should not enter or display because the field is designated as a protected data field.
 16. Press the RESET key. The INPUT INHIBITED indicator should go out, and the keyboard should unlock.
- Note:** The following steps check for tab, DUP, and new line functions.
17. Press the --> (Tab) key. The cursor should appear under character A in the second row of characters.
 18. Press the DUP key while holding the SHIFT key down. An asterisk "*" should appear in the cursor position, and the cursor should move under "I" of INSERT. (On the Operator Console keyboard, use the Tab key; the cursor should move under "I" of INSERT, but the "*" should not appear.)
 19. Space one character position. The "I" should disappear.
 20. Press the <- (Backspace) key. The cursor should move back one space to where the "I" was formerly located. If Backspace is pressed again, the INPUT INHIBITED indicator should display, the keyboard should lock, and the character should not enter or display because the cursor is at the beginning of the field.
 21. Press the Tab key twice. (Use the SKIP key on Data Entry keyboards.) The cursor should appear in the first character position of the fifth row of displayed data.
 22. If the display station being tested has a selector light pen attached, use the light pen to test steps 23 to 26. Otherwise, use the cursor select key to simulate the light pen.
 23. Fire pen on the detectable field that has a question mark "?" as its first character. The question mark should change to a greater than ">" symbol. The remainder of the fields should not change.
 24. Fire pen again on the field. The greater than symbol should change back to a question mark. The remainder of the fields should not change.

25. Fire pen on the next detectable field that has a greater than symbol as its first character. The greater than symbol should change to a question mark. The remainder of the fields should not change.
26. Fire pen, again, on the same field. The question mark should change back to greater than symbol. The remainder of the fields should not change.

Note: The following steps test the erase and clear functions.

27. Position the cursor under character "E" in the second row of displayed data.
28. Press the ERASE EOF key. Characters "E" through "Z" should disappear, and the cursor should not move.
29. Press the ERASE INPUT key. All unprotected data, including keyed in characters and fields that originally appeared as INSERT CK, should disappear from the screen.
30. Press the CLEAR key. All characters on the screen should disappear, and the cursor should move to character location "0". Press the RESET key, and, at your option, key in and execute the next test message or resume normal operations.

5250 Operating Instructions

The operator should perform the following steps to complete the Basic Test Pattern check list:

1. Key in the row of alphabetic characters and the one space exactly as they appear in the row above. All characters should enter correctly, and the cursor should move under "I" of INSERT.
2. Move the cursor under "C" of "CK" in the second row of displayed data using the -> (Right Arrow) key.
3. Press the INS MODE key. The INSERT MODE indicator should display.
4. Press the "C" key. The data should not change, but the INPUT INHIBITED indicator should display and the number 0012 should flash red on the error line (in addition to the INSERT MODE indicator, which has remained on).
5. Press the RESET key. Both indicators should go out.
6. Press the --> key (Tab). The cursor should move under "C" character of COPY in the fourth row of displayed data.
7. Enter the special characters as they appear in the row above, shifting where required. The cursor should appear under "0" character after the space bar is pressed.
8. Enter the digits "0" through "9" and the characters ",.-" and "A" as they appear in the row above. (On Data entry keyboards, use the "," over "*" and "." over "\$" keys to enter the "," and "." characters. Check with your supervisor if you're not sure which type of keyboard you have.) The following results should occur:
 - A. For Typewriter and Operator console keyboards without Numeric Lock feature, all characters should enter.
 - B. For a Data Entry keyboard without the Numeric Lock feature, the characters ",." and "-" enter normally; however, the "A" character enters as the "<" symbol.
 - C. For all keyboards with Numeric Lock feature characters ",." and "-" enter normally; the "A"

keys are pressed. (Use RESET and -> keys to move the cursor from those positions.)

9. Check ^ (Up), v (Down), -> (Right), and <- (Left) cursor move keys for proper operation.
10. Check the typematic function of the space bar or any other keys with typematic capability. Use the first field in the fourth row of displayed data for this step.
11. Move the cursor under the first character displayed of the test message.
12. Press any alphameric key. The INPUT INHIBITED indicator should light, the number 0005 should flash red on the error line, the keyboard should lock, and the character should not enter or display because the field is designated as a protected data field.
13. Press the RESET key. The INPUT INHIBITED indicator should go out, and the keyboard should unlock.

Note: The following steps check for tab, erase end of field, and erase input functions.

14. Press the --> (Tab) key twice. The cursor should appear under character I in the word Insert.
15. Space one character position. The I should disappear.
16. Press the <- (Backspace) key. The cursor should move back one space to where the I was formerly located.
17. Press the Tab key. (Use the SKIP key on Data Entry keyboards.) The cursor should appear in the first character position of the fourth row of displayed data.

Note: The following steps test the erase and clear functions.

18. Position the cursor under character "E" in the second row of displayed data.
19. Press the ERASE EOF key. Characters "E" through "Z" should disappear, and the cursor should move to where the "I" of Insert used to be.
20. Press the ERASE INPUT key. All unprotected data, including keyed in characters and fields that originally appeared as INSERT OK, should disappear from the screen.
21. If the display station being tested has a selector light pen attached, continue with Step 26. If a pen is not attached, press the RESET key, and, at your option, key in and execute the next test message or resume normal operations.
22. Fire pen on the detectable field that has a question mark (?) as its first character. The question mark should change to a greater than (>) symbol. The remainder of the field should not change.
23. Fire pen again on the field. The greater than symbol should change back to a question mark. The remainder of the field should not change.
24. Fire pen on the next detectable field that has a greater than symbol as its first character. The greater than symbol should change to a question mark. The remainder of the field should not change.
25. Fire pen, again, on the same field. Question mark should change back to greater than symbol. Remainder of the field should not change.

26. Press the CLEAR key. All characters on the screen should disappear, and the cursor should move to character location 0. Press the RESET key, and, at your option, key in and execute the next test message or resume normal operations.

Chapter 4. Development Tools

SNAsim's TOOLBOX contains tests and utility programs which promote rapid and simple test case development as well as provide support and problem determination functions. By using the Toolbox, a user can quickly generate test cases without programming.

TOOLBOX Test Library

The following tests and utility programs are associated with the TOOLBOX library:

Test #	Description
001	Logical Link Control Diagnostics (LLCPIING.EXE)
002	BIND Changer [LITE, STD, PRO]
003	SNA Client Simulation System (SNASEC.EXE) [STD, PRO]
004	Script Facility [PRO]
005	LLC Route Information Field (RIF) Override [PRO]
006	Screen Builder (SCRNBLDR.EXE) [PRO]

Note: LLCPIING is the only Tool provided with the INTRO Version of SNAsim. For a complete description of the Test Libraries and Utility Programs supplied with all other versions of SNAsim, please refer to Chapter 5. SNAsim Test Libraries of the SNAsim Host Simulation System User's Guide, contained on the CD-Rom.

LLCPING Utility Program

The LLCPING Utility Program monitors the response time and availability of network nodes on the Local Area Network. It can diagnose LAN connection problems, monitor selected stations performance, discover all active nodes on a LAN, display detailed LAN adapter information, discover all possible routing paths of a particular work station, and generate network traffic.

Note: The LLCPING Utility Program can either be executed from the DOS Command Line, by typing LLCPING.EXE, or the Toolbox Library Menu.

BIND Changer Test

The BIND Changer Test allows the user to change any value in the BIND parameters sent by SNAsim tests. Included in the capability of this test is the ability to refresh the BIND image of your choice with the SNAsim default values. This allows the BIND to be changed freely, and then easily restored to the default values.

SNA Client Simulation System (SNAsec)

The SNA Client Simulation System (SNAsec) is a stand-alone program which functions as a 3270 emulator client. SNAsec communicates with primary 3270 tests and supports up to 254 SNA (SDLC/LAN) LU2 sessions.

Note: The SNAsec program is executable from the DOS Command Line by typing SNASEC.EXE

Script Facility Test

The Script Facility Test interprets a file containing script language commands to produce user-defined communications traffic. Script Facility allows a novice user to proficiently build and send test sequences, or allows an expert user to rapidly create test sequences that may be later used as a basis for more complicated tests.

LLC Route Information Field (RIF) Override Test

The LLC Route Information Field (RIF) Override Test allows the user to specify specific RIF field values which are then used by SNAsim in the LAN header for all subsequent frames.

Screen Builder Utility Program

The Screen Builder Utility Program, allows the SNASIM operator to easily build and manage data streams destined for Model 2 displays.

LLCPING Utility Program

LLCPING is a stand-alone LAN utility program, residing in the \SNASIM subdirectory, which monitors the response time and availability of network nodes on the Local Area Network. It can diagnose LAN connection problems, monitor selected stations performance, discover all active nodes on a LAN, display detailed LAN adapter information, discover all possible routing paths to a particular work station, and generate network traffic.

Note: The features provided are dependent upon the version of SNAsim purchased.

Hardware and Software Requirements

Before executing the LLCPING, the appropriate LAN Support Program drivers (such as the IBM LSP Version 1.35 or above) must be loaded from CONFIG.SYS for DOS environment or MSDLC32 or DLC Protocol must be installed for Windows environments.

Note: Please refer to the Hardware and Software Requirements section in Chapter 1.

Configuration Parameters

The LLCPING configuration parameters may be altered using the menus and saved for later use or by changing the associated .INI file in any text editor. The default parameter file is LLCPING.INI. The LLCPING.INI file contains a section, for each main menu item. The sections and settings are listed in the LLCPING.INI file in the following format:

```
[section name]
keyname=value
```

In this example, [section name] is the name of a section. The enclosing brackets ([]) are required, and the left bracket must be in the leftmost column on the screen. The keyname=value statement defines the value of each setting. A keyname is the name of a setting. It can consist of any combination of letters and digits, in upper or lower case, and it must be followed immediately by an equal sign (=). The value can be an integer, a string, or a hexadecimal string, depending on the setting.

You can use the LLCPING menus to change all of the settings. This is the safest and most recommended way because there is no need to open and edit the LLCPING.INI file, where it is easier to make mistakes.

Menus

When you execute LLCPING.EXE, the main menu including copyright and product version information will appear. Look closely at the screen; it consists of two parts - the main menu, and the bottom help line.

To get familiar with the LLCPING menus, here are some navigating basics:

- Use the highlighted capital letter to choose a menu command or use the arrow keys to move to the command and press Enter.
- Press <Esc> to leave a pull-down menu in order to go to the previous menu.
- To exit LLCPING, choose Exit (press E or move the highlight bar to Exit and press Enter).

Main Menu

After the starting LLCPING, the Main Menu will be displayed with information concerning your LLCPING program. The main menu shows the version of LLCPING that is being run. The LLCPING version number is the date which LLCPING was released, and may be found at the end of the first line of the main menu. The LLCPING version number is interpreted as follows. The first digit is the year of the release, the second digit is the month of the release in hexadecimal, and the last two digits are the day of the release. For example, in the menu shown below, the version number is 8727, which was released in 1998, on July 27.

All the commands except Start Ping and Exit open up pull-down menus with other menu items. You can use the Up and Down arrow keys on your keyboard to move the highlight bar up and down the list of commands, pressing Enter when the bar is on the command you want. You may also select a menu item by pressing the key corresponding to the highlighted letter of the command. To leave a menu, just press Esc.

```
Logical Link Control Diagnostics Tool (Version 8727)
Start Ping  Setup      Options      Display      Exit
MultiPing=OFF ADDR=TEMP 4000AC130200 ROUTING=NO  #Ping=0      Adp=0
Copyright(c) 1994-1998 by Applied Computer Technology, Garland, TX U.S.A.

Run LLCPING With Current Setting
```

The fourth line of the main menu shows the current LLCPING settings which include:

Multi-Ping,
Currently selected .SYN name and MAC address for the Single Ping,
Routing Type,
Number Times to Ping,
and the Adapter Number.

There are three general types of LLCPING menu items:

- **Commands** perform a task (running ping, quitting, storing options, and so on).
- **Toggles** let you switch an option ON or OFF (Multi-Ping, System Alarm, and so on) or cycle through and choose one of several options by repeatedly pressing the Enter key until you reach the item desired (such as Routing Type).
- **Settings** allow you to specify certain run-time information to LLCPING, such as SYN file name, data length, and so forth.

Start Ping

Start ping to a single station or multiple stations depending on the Multi-Ping setting. If the Multi-Ping is OFF, the system will ping the currently selected station until the number of specified iteration is reached or the user presses a key to stop ping. Otherwise, the system will ping to multiple stations listed in the specified SYN file.

The following is an example output screen for single station ping:

```
-----Logical Link Control Diagnostics Tool (Version 8727)-----
Copyright(c) 1994-1998 by Applied Computer Technology, Garland, TX U.S.A.

Node  Status  Cycles  Elapsed  Current  Best  Average  Worst
====  =====  =====  =====  =====  =====  =====  =====
P200  Active    91      4745.005  54.189   12.776  52.154   81.718

Press Any Key To Stop
```

The following is an example output screen for multiple stations ping:

```

Logical Link Control Diagnostics Tool (Version 8727)
Copyright(c) 1994-1998 by Applied Computer Technology, Garland, TX U.S.A.

```

Node	Status	Cycles	Elapsed	Current	Best	Average	Worst
P200	Active	336	8544.324	28.862	0.933	25.430	63.396
P166	Active	336	315.773	0.930	0.930	0.940	1.205
p266	Active	336	302.832	0.919	0.877	0.901	1.160
p233	Active	336	315.988	0.931	0.928	0.910	1.202
4862	No Rsp	0	0.000	0.000	0.000	0.000	0.000
clon	No Rsp	0	0.000	0.000	0.000	0.000	0.000
ALR1	No Rsp	0	0.000	0.000	0.000	0.000	0.000
LS12	Active	336	315.718	0.942	0.928	0.940	0.978
4863	Active	336	364.473	1.087	1.069	1.085	1.362
4864	Active	336	402.634	1.193	1.186	1.198	1.555
BT	Active	336	314.059	0.936	0.885	0.935	1.187
486	No Rsp	0	0.000	0.000	0.000	0.000	0.000
P90S	Active	336	317.114	0.940	0.930	0.944	1.281
BD1	Active	335	309.210	1.103	1.152	1.162	1.306
4862	Active	335	315.057	0.941	0.934	0.943	1.175
Temp	Active	335	315.939	0.939	0.936	0.913	1.151

Press Any Key To Stop

There are eight columns in the output screen. The first column displays a synonym name of a workstation or blank if the synonym name is not available. The second column displays the workstation (node) status in color. The "active" status is displayed in green, the "down" status is in red, the "up" status in yellow and the "No Rsp" status in magenta. The row of an inactive (down or no response) node is also displayed in the high intensity white color to distinguish from the active (active or up) nodes.

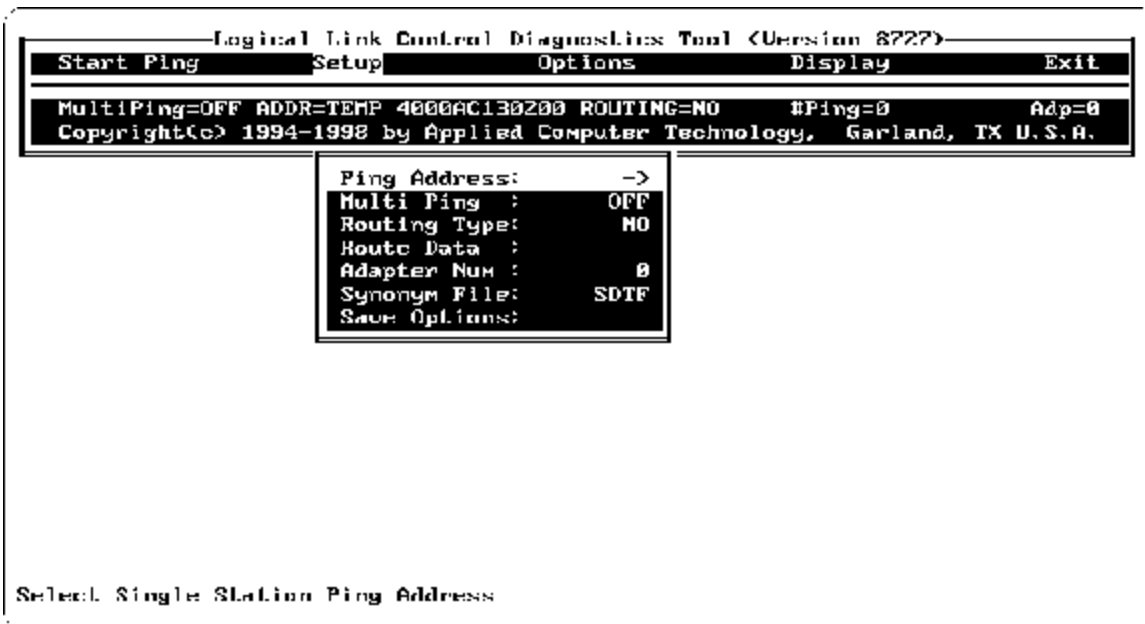
The third and fourth columns display the number of cycles and the elapsed time since LLCPING was started. The last four columns display the current, best, average and worst response time in milliseconds.

Note: In each response time category, green highlighting indicates the best and red highlighting indicates the worst.

The maximum number of nodes that LLCPING can monitor depends on the number of lines that a CRT can display. Normally, up to sixteen nodes can be monitored on a 25 line CRT screen and forty one nodes on a 50 lines CRT screen. To configure a SVGA monitor to display 50 lines, load the ANSI.SYS (DEVICE=PATH\ANSI.SYS) from the CONFIG.SYS file and type the following command from the DOS prompt "MODE CON LINES=50" or set SNAsim CONFIGURE/DISPLAY LINE option to 50 before running LLCPING from the TOOLBOX library.

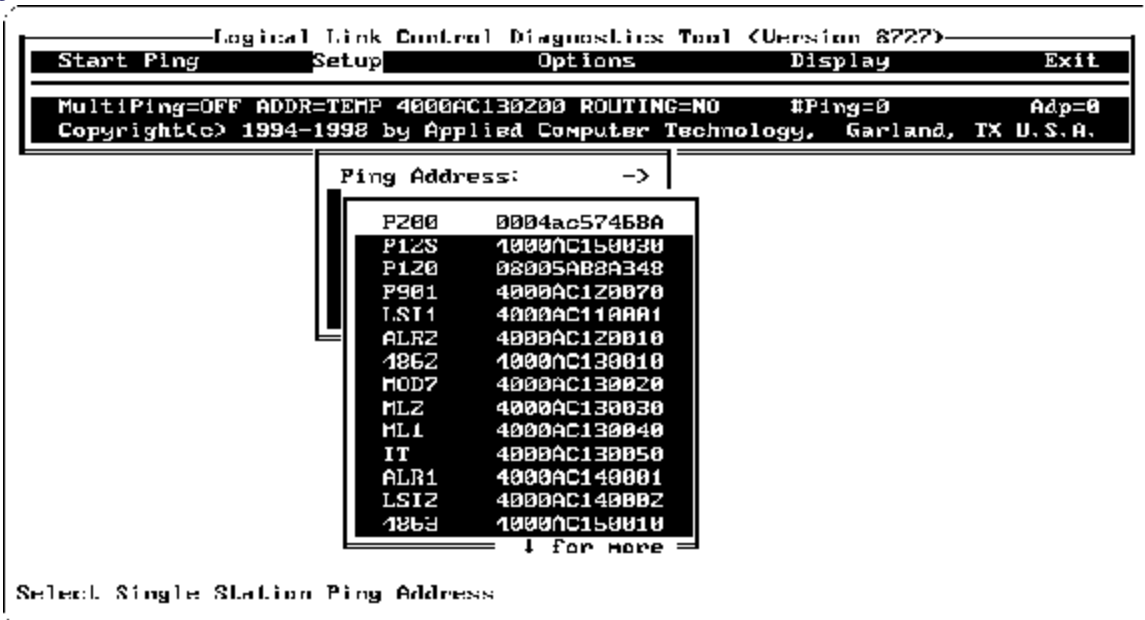
Setup

The Setup pull-down menu allows the user to change the LLCPING settings including:
 Destination Ping Station Address for single station ping (Ping Address),
 Setting for single or multiple station ping (Multi-Ping),
 Routing Type,
 Source Route Data,
 LAN Adapter Number,
 Input Synonym file name (Synonym File), and
 Save Options.



Ping Address

This menu option allows selection of the destination MAC address for single station ping. The input SYN file should be customized by the user to contain the names and MAC addresses of the various stations to be pinged. The default file name is SNASIM.SYN.



The contents of .SYN file are in the following format:

nnnn	=	A four-character maximum synonym name for the IUT
b	=	Blank to separate the synonym from its MAC Address
hh...	=	MAC Address, character string of 12 hexadecimal digits (six-byte address) which must start at column six in the file

```
nnnnbhhhhhhhhhhhhhhhhhh
nnnnbhhhhhhhhhhhhhhhhhh
...
```

The following shows an example SNASIM.SYN file:

```
ALR1 10005A6BCFF4
ALR2 10005A002862
ALR3 10005A122AA9
MOD7 10005A33221E
dum1 100010001001
dum2 100010001002
dum3 100010001003
dum4 100010001004
dum5 100010001005
dum6 100010001006
```

A new ping station address can be selected by scrolling through the pick-list when this option is selected. If the desired station is not in the list, the last element (TEMP) in the list can be selected and a new MAC address can be entered for temporary use.

Multi-Ping

Allows the user to set single or multiple stations ping. The default is OFF (single station ping).

Routing Type

Allows the user to specify the routing type to use in single or multiple stations ping. The available options are NO (No Routing), ALL (All Route), SINGLE (Single Route) and SOURCE (Source Route which requires specific routing data). The default is NO.

Route Data

Enables the user to specify source route data to be used in a source route broadcast ping to all active stations on a specific LAN segment. The value must be provided when the routing type is set to "SOURCE" option. The length of the routing data must be even and each segment must include the Ring/Bus number and the Bridge portion. This option is unavailable when the routing type is not set to source route.

Adapter Number

Allows the user to specify deployment of primary (0) or alternate (1) adapter, when displaying adapter information or when executing LLCPING. The default value is zero.

Synonym File

Allows the user to specify an input synonym file name. The default file name is SNASIM.SYN.

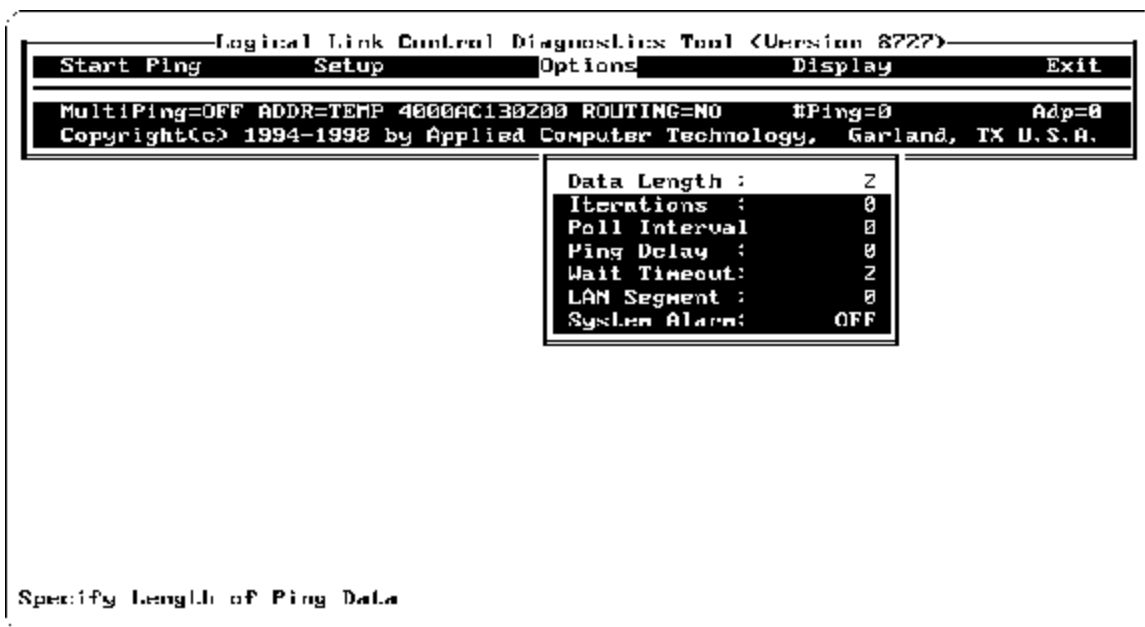
Save Options

Allows the user to enter the name of the file in which to save the current LLCPING parameters. The default extension is .INI. The default directory is the current one. The default configuration filename is SNASIM.INI.

Options

Displays a pull-down menu which includes optional LLCPING settings such as:

- The Data Length,
- Iteration count,
- Poll Interval,
- Ping Delay,
- Wait Timeout,
- LAN Segment, and
- System Alarm.



Data Length

Allows the user to specify the length of test data, when generating LAN traffic. The default value is 2 and the maximum value is 1024 bytes. It is recommended that the maximum value be used with no delay to generate maximum traffic loads on a LAN.

Iteration

Allows the user to specify the number of times all selected stations are pinged when monitoring the response time. The range is from 0 to 99999999. If zero is specified, ping will not be stopped until user presses a key to terminate it. The default is 0.

Poll Interval

Allows the user to specify polling interval for all inactive stations. The default value is zero which instructs LLCPING not to poll an inactive station. The value "one" means to polls one of the inactive stations at least once per every ping cycle. It is recommended that a poll interval value be set to non-zero value when monitoring the availability of workstations on the LAN. The maximum value for polling interval is 32767.

Ping Delay

Allows the user to specify delay between each ping to prevent from congesting the network when monitoring the response time of all active workstations. The delay can be specified between 0 to 120 half seconds (0-60 seconds). The default value is zero. It is recommended that this option be set to a non-zero value when monitoring response time. However, when generating LAN traffic, the default value zero should be used.

Wait Timeout

Allows the user to specify the number of half seconds to wait for a response before setting a station status to "No Rsp or Down" when monitoring the response time of all active workstations. The value can be specified between 1 to 120 half seconds (½-60 seconds). The default value is one second. It is recommended that a value greater than one be used when monitoring the response time and availability of a multi-segment LAN.

LAN Segment

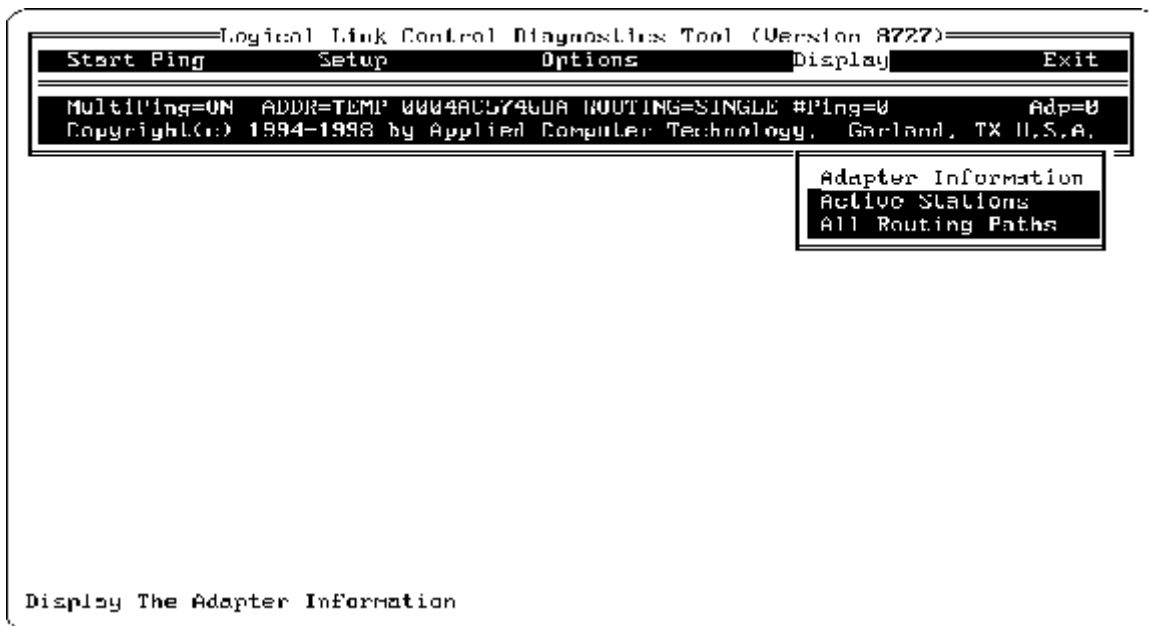
Allows the user to specify a LAN segment number to be used in discovering the current active stations on a specific LAN segment. The default is 0 which means to discover all the active stations of all LAN segments. If the value (1-8) is specified, LLCPING will display only the active stations of the specified LAN segment.

System Alarm

Allows the user to toggle the system audible alarm ON or OFF. The default value is OFF. When set to ON, LLCPING will beep when a workstation is down or up while monitoring the response time and availability of selected workstations.

Display

Displays a pulled-down menu to show selectable LLCPING operations which include:
current adapter information display,
discovering all active stations on a specific LAN segment, and
discovering all routing paths of a currently selected station.



Adapter Information

Displays the current installed LAN adapter information which includes LAN adapter status table and the extended status table. Data displayed includes: node address, min/max SAP/Station info, adapter data rate, DHB buffer size, adapter type, etc.

The following is an example output screen of adapter information display:

```

-----Logical Link Control Diagnostics Tool (Version 8727)-----
Copyright(c) 1994-1998 by Applied Computer Technology, Garland, TX U.S.A.

Adapter Number      - 00
Encoded Address     = 10005ADEC48
Group Address       = 00000000
Maximum SAP         = 2
Maximum Station     = 24
Available Station   = 8
Share RAM Size      = 16 KBytes
Adapter Params Addr = C800:0242
Upstream Node Addr = 4000AC150030
Last Poll Address   = 4000AC130166
Beaconing St MAUN  = 000050B035A
Last Beacon Type    = 0x0000
Access Priority      = 0x0003
Current DHB Size    = 4192 Bytes
RAM Page Frame      = 16 Kbytes
Adapter Type        = TR Network 16/4 Adapter
Micro Code Level    = 000002C3F2F4F9F4F440

Adapter Status      - Open
Node Address        = 4000AC150010
Function Address    = 00000000
Open SAP            = 1
Open Station        = 1
Adapter Config      = 0x2D
Adapter Data Rate   = 16 Mbps
Adapter MAC Addr    = C800:0196
Upstream Phy Addr   = 00000000
Last Source Addr    = 4000AC130166
Beacon St Phy Addr = 00000000
Ring Status         = 0x2000
Local Ring/Bus Num = 0x0001
Maximum DHB Size    = 17960 Bytes
LLC Type            = NON-MDIS Driver

Press <Esc> to continue
    
```

Active Stations

Discovers and displays all active stations on a specific LAN segment. If the LAN Segment option under the OPTIONS menu is set to zero, then LLCPING will discover all the active stations of all LAN segments. If the value (1-8) is specified, LLCPING will display only the active stations of the specified LAN segment.

The following is an example output screen of all active stations on all LAN segments:

```

-----Logical Link Control Diagnostics Tool (Version 8727)-----
Copyright(c) 1994-1998 by Applied Computer Technology, Garland, TX U.S.A.

Total Active Stations - 13
Ring/Bus Number       = 1
Number Of Hops        = 0
  Station 1 Address    = 00005AD0A05A
  Station 2 Address    = 4000AC130166
  Station 3 Address    = 10000C130266
  Station 4 Address    = 4000AC160020
  Station 5 Address    = 4000AC130233
  Station 6 Address    = 4000AC110001
  Station 7 Address    = 10005ADECCD1
  Station 8 Address    = 10000C150030
  Station 9 Address    = 4000AC140002
  Station 10 Address   = 4000AC150020
  Station 11 Address   = 4000AC1300D1
  Station 12 Address   = 4000AC150010
Ring/Bus Number       = 2
Number Of Hops        = 1
  Station 1 Address    = 10000C1300D2

Press <Esc> to continue
    
```

The following is an example output screen of all active stations on LAN segment 1:

```
-----Logical Link Control Diagnostics Tool (Version 8727)-----
Copyright(c) 1994-1998 by Applied Computer Technology, Garland, TX U.S.A.

Total Active Stations - 12
Ring/Bus Number      = 1
Number Of Hops       = 0
Station 1 Address    = 00005AD0A05A
Station 2 Address    = 4000AC130255
Station 3 Address    = 10000C160020
Station 4 Address    = 4000AC130233
Station 5 Address    = 4000AC110001
Station 6 Address    = 10005ADFCC01
Station 7 Address    = 4000AC150030
Station 8 Address    = 10000C140002
Station 9 Address    = 4000AC130156
Station 10 Address   = 4000AC150020
Station 11 Address   = 4000AC1300D1
Station 12 Address   = 4000AC150010

Press <Esc> to continue
```

All Routing Paths

Discovers all possible routing paths for a specific LAN workstation. The following is an example output screen:

```
-----Logical Link Control Diagnostics Tool (Version 8727)-----
Copyright(c) 1994-1998 by Applied Computer Technology, Garland, TX U.S.A.

Source Address       - 4000AC150010
Destination Addr     = 4000AC130200
Total Paths          = 1

Path Number 1       = 00210010

Press <Esc> to continue
```

Exit

The Exit command quits LLCPING and returns you to the DOS prompt in the currently active directory or to the SNAsim TOOLBOX library menu.

Error Messages

Error messages are displayed in a blinking red color. For LAN Support Program error messages, please refer to the LAN Technical Reference.

Chapter 5. CD-Rom Online Documentation

The SNAsim documentation that is included on your CD-Rom is in Adobe Acrobat Portable Document Format (PDF). To view these files, you must first install the Acrobat Reader. The Windows 98 and WinNT/2000 versions are on your CD-ROM, other versions are available from the Adobe web site at:

<http://www.adobe.com/prodindex/acrobat/readstep.html>

Installing Acrobat Reader

1. Insert your SNAsim Online Documentation CD-Rom into your CD-Rom Drive.
2. From the Windows 98 or WinNT/2000 Desktop, choose START, then RUN. Type in (or browse to) the path \ACROBAT\RS32E301.EXE, then click OK. Acrobat Installer will prepare to install the Reader.
3. Click ACCEPT or press ENTER to continue past the licensing screen because ACT has met Adobe's licensing requirements.
4. Click INSTALL or press ENTER to accept the default installation path, then click OK to continue past the registration message.
5. Type in your name and press the TAB key, then type your organization name and press ENTER.
6. When the installation is finished, double-click ACROREAD.EXE to open it.

Viewing a Document

1. Click the File Menu and click Open. Double-click the document you want to view. The CONTENTS.PDF document contains hyperlinks to all SNAsim documentation.
2. Click the View Menu, then click Bookmarks and Page or simply click the Bookmarks Icon on the Toolbar. A list of chapters, appendices or other contents indicators appears on the left side of your screen. You can enlarge the Bookmarks window by dragging the double-triangle icon (next to the lower right corner of the Bookmarks window) to the right.
3. Click the triangle to the left of a listing in the Bookmarks window to see its subsections.

IMPORTANT: As you move the cursor around in the Bookmarks window, it sometimes turns into a pointing finger. When it does, you can click once and go directly to the section the finger is pointing at. When a hand appears, the item is not selectable.

Printing Documentation

You can print out an entire document or any part of it by following these steps:

1. Pull down the File Menu and click Print.
2. Select All, Current or click a page Range, then click OK. When printing by page Range, use the PDF page numbers indicated in the status bar, which may differ from those appearing at the top of the page.

Searching the Documentation

A searchable index for all documentation is included on the CD-Rom and may be accessed from Tools/Search/Query Menu selections.

Appendix A. Frequently Asked Questions

1. What operating systems and drivers can SNAsim be used with?

SNAsim is a DOS application and can be run with DOS, Win98*, and WinNT/2000* (*run from the DOS box). The required drivers and supported protocols are shown below:

<u>OS</u>	<u>SDLC Driver</u>	<u>LAN Driver</u>
DOS 6.x	Internal	IBM LAN Support Program
Win98	Internal	MSDLC32 with NDIS adapter driver
WinNT/2000	--	DLC with NDIS adapter driver

2. What hardware and software do I need for SDLC?

- IBM SDLC Adapters (Part #76-H2750, 42H4332, 73G7099, 1501205, or 1502090), Multi-Protocol Adapter (Part #6450348) for the Model PS2, or the MicroGate Digital Service Adapter (DSA) (Part #142003) for High Speed SDLC Communications
- Synchronous Modems or Modem Eliminator
- Full DB25 modem cables
- A 3270 and/or 5250 client to communicate with or SNAsec.

Note: 19.2K and 56K SDLC Communications Kits are available from ACT, which include an SDLC adapter, modem eliminator, and cable.

3. What hardware and software do I need for LAN?

- LAN is Ethernet or Token Ring
- Ethernet or Token Ring Adapter with 802.2 LLC or NDIS drivers (see 11 and 12 below)
- Multi-Access Unit (Token Ring), Hub (Ethernet), or crossover cable (Ethernet)
- A 3270 and/or 5250 client to communicate with or SNAsec.

4. I have the correct hardware and software but I can't get SDLC to work.

Check:

- SDLC data link addresses on both units
- NRZI non-NRZI settings on both units
- Make sure there are no Serial Mouse drivers loaded or Sound Blaster conflicts

Note: The SDLC card uses Interrupt 3 and I/O Addresses 380-38F.

5. I have the correct hardware and software but I can't get LAN to work.

Check:

- MAC and SAP addresses of both units
If you get the message: "S38 LAN Init Error 11 22", the Implementation Under Test (IUT) is not online or you have an incorrect MAC address in the SNASIM.SYN file.
- Make sure the correct .SYN file entry for the IUT is selected from the Configure/ LAN Options/Select SYN Name Menu.
- Make sure the Destination SAP Address is the same as the IUT Source SAP Address.
- Check IUT MAC Address in the SNASIM.SYN file. Ethernet addresses may need the address bits swapped, depending upon the driver settings. Use the Swap Address Option on the Adapter Options menu.
- If you have more than one LAN adapter make sure the correct adapter number is selected (0 or 1).
- Check the MAC Address setting on the IUT.
If you get the message: "Making contact with xxxx", the address is correct but the XID is not being answered. Make sure the IUT is ready and has the correct SNAsim MAC and SAP addresses.

6. How do I configure for 5250?

Set the SNAsim Node type to 2.1 and configure the IUT with the following names:

<u>Name</u>	<u>SNAsim (Remote Node)</u>	<u>5250 (Local Node)</u>
Net Name	NETWORK	NETWORK
PU Name	SDTFPU	DUTPU (May be called CP name)
LU Name	SDTFLU	DUTLU
Partner LU	DUTLU	SDTFLU
Mode Name		NORMAL

7. Ethernet does not work.

- Make sure the same Ethernet type (IEEE or DIX) is used on both nodes. (Refer to your LAN driver documentation for information on selecting Ethernet types).
- Use LLCPING to ping both yourself and the partner node. If you can PING yourself and not your partner node, then the two nodes are using different Ethernet types (IEEE or DIX).
- See 5, above

8. Token Ring does not work.

- Use LLCPING to ping both yourself and the partner node.
- See 5, above

9. 3270 does not work.

- Examine the Log/Trace file

10. 5250 does not work.

- Make sure you have configured the 5250 IUT names in item 6, above.
- Examine the Log/Trace file

11. How do I trouble shoot

- SDLC
 - Use the SDLC Trace
- Ethernet or Token Ring
 - Use the LAN Trace
- 3270 or 5250
 - Use the SNA Trace

12. How do I set up the LAN (802.2 LLC) drivers in Win98?

A. Open windows control panel. Double click on Network.

B. Check the configuration panel for DLC protocol.

C. If it does not exist add the protocol.

S Click on add and choose protocol

S Select Microsoft and choose Microsoft 32 bit DLC

S Click on OK or press enter

Note: If the Microsoft 32 bit DLC does not appear as an option, follow the steps below for Retrieving Microsoft DLC32 and begin again.

D. Verify that it is bound to the correct network board

S Right click on network board and choose properties

S Click on bindings tab and verify that DLC is checked

E. Configure MSDLC

S CCB1 = 1

S CCB Adapter Num = 0 or 1

Note: If you continue to have problems after following these steps, retrieve the latest MSDLC module from Microsoft, then try again.

Retrieving Microsoft DLC

- A. Go to Microsoft's Web Site at <http://www.microsoft.com>
- B. Click on the search box at the top of the page.
- C. Type MSDLC32.EXE in the entry box and press enter.
- D. Look for the Hyperlink that says Availability of MSDLC32 and Support Boundaries.
- E. Look towards the bottom of the page for the MSDLC hyperlink.
- F. Click on MSDLC32 hyperlink to download.
- G. When the file is done downloading, go to windows explorer and double click on MSDLC32.EXE to expand.
- H. Open the README.DOC in a word processor for instructions on installing the DLC module.

Note: MSDLC32.EXE is a self extracting zip file which contains more than one file. It is a good idea to save it to an empty directory so when it is extracted, you know which files to use.

Installation of MSDLC32

- A. Create an installation disk or temporary directory on hard drive.
- B. Run MSDLC32.EXE to extract files
- C. Run - START-SETTINGS-CONTROL PANEL
- D. Select Network Icon
- E. Select ADD
- F. Select PROTOCOL
- G. Select HAVE DISK
- H. Specify path to DLC directory or drive (from step 1)
- I. Select OK
- J. Select Protocol
- K. Select Microsoft
- L. Select "Microsoft 32-bit DLC"
- M. The Installation utility will recopy the network files and copy over the DLC driver
- N. Manually copy the DLC32.HLP and DLC32.CUT files to the WINROOTHELP subdirectory (i.e. C:\WIN98\HELP)
- O. Configure MSDLC
 - S CCB1 = 1
 - S CCB Adapter Num = 0 or 1

- P. Reboot the machine.

Troubleshooting

MSDLC32 includes a trace utility - TRCDLC.EXE. Run this utility to verify proper operation or to save a trace for future reference. The trace is logged to TRCDLC0.DAT and TRCDLC1.DAT. Trace Options:

TRCDLC -S: Returns version number of DLC stack.
TRCDLC -H: Help for command line options
TRCDLC -C: Closes trace utility from another DOS box

13. How do I set up the LAN (802.2 LLC) drivers in WinNT/2000?

- A. Install the adapter NDIS drivers
B. Install DLC protocol

14. Where can I buy or find 802.2 and/or NDIS drivers for DOS operation?

You can purchase from ACT or try:

- LAN Support Program
<http://www.networking.ibm.com/nes/neslant.htm#lsp>
- IBM LAN Support Program updates to version 1.3X
Requires LAN Support Program version 1.30 or later be installed first.
[LSP138.EXE | Version 1.38]
- Users Guide for LAN Support Program v1.3X
[BOOKLSP.EXE | 4-27-97 | 804,704 bytes]
- IBM LAN Support Program Protocol manager update
Requires LAN Support Program version 1.30 or later be installed first.
[PROTUPDT.EXE]
- LAN Support Program Custom Diskette
[LSPCUST.EXE | Version 1.06 | 5-13-96 | 159,169 bytes]
- User Guide for LAN Support Program Custom Diskette
[BOOKCUS.EXE | 4-27-97 | 779,233 bytes]
- NDIS Support Files
http://infodeli.3com.com/infodeli/swlib/unsupported_adapter_files.htm
- DOS NDIS drivers for various adapters
[DOSNDIS.EXE | 6-16-95 | 86,892 bytes]

15. How do I set up DOS with the 802.2 drivers for Token Ring?

CONFIG.SYS (Native)

```
DEVICE=\LSP\DXMA0MOD.SYS 001  
DEVICE=\LSP\DXMC0MOD.SYS 4000AC140002,C800  
DEVICE=\LSP\DXMT0MOD.SYS ST=6 S=12 ES=2 EST=7 C=12
```

CONFIG.SYS (NDIS)

```
DEVICE=\LSP\PROTMAN.DOS /I:C:\LSP  
DEVICE=\LSP\IBMTOK.DOS
```

```

DEVICE=\LSP\DXMA0MOD.SYS 001
DEVICE=\LSP\DXME0MOD.SYS 4000AC140002,20,0
DEVICE=\LSP\DXMT0MOD.SYS ST=6 S=12 ES=2 EST=7 C=12 O=N

```

PROTOCOL.INI

```

; ----- Protocol Manager Definition -----
[PROTOCOL_MANAGER]
DriverName=PROTMAN$
; ----- Protocol Driver Definition -----
[DXME0_MOD]
DriverName=DXME0$
Bindings=TokenRing
[TokenRing]
DRIVERNAME=IBMTOK$
RAM=0xC800
NETADDRESS="4000AC140002"

```

AUTOEXEC.BAT

```

\LSP\NETBIND

```

16. How do I setup DOS with the 802.2 drivers for Ethernet?

CONFIG.SYS (NDIS)

```

DEVICE=\LSP\PROTMAN.DOS /I:D:\LSP
DEVICE=\LSP\EXP16.DOS
DEVICE=\LSP\DXMA0MOD.SYS 001
DEVICE=\LSP\DXME0MOD.SYS 400000000486,,1
DEVICE=\LSP\DXMT0MOD.SYS O=N ES=2 EST=2 ANR=Y

```

PROTOCOL.INI

```

; ----- Protocol Manager Definition -----
[PROTOCOL_MANAGER]
    DriverName = PROTMAN$

; ----- IBM Ethernet Protocol Definition -----
[ETHERNET]
    DriverName = DXME0$
; ----- Bindings Statement -----
    Bindings = EXP16
; Intel EtherExpress(tm) 16 Ethernet Adapter
[EXP16]
    IOADDRESS = 0x300
    DRIVERNAME = EXP16$

```

AUTOEXEC.BAT

```

\LSP\NETBIND

```

Appendix B. Technical Support

Applied Computer Technology's SNAsim Product Line comes with three months of pre-paid technical support.

Additional technical support may be purchased.

Technical support is available 24 hours a day, 7 days a week, choose one of the following methods:

World Wide Web Site

For WWW technical support, fill out the form at <http://www.acomtech.com/techsupp.html>, and a technical support representative will contact you.

In addition, a complete list of technical bulletins, compatibility updates, enhancement utilities, FAQs, and much more are available from our web site.

E-mail

For technical support via E-mail, send a detailed description to support@acomtech.com, and a technical support representative will contact you.

FTP Site

To reach our FTP Site, FTP to [ftp.acomtech.com](ftp://ftp.acomtech.com), log in as **anonymous**, and use your e-mail address as the password. Change to the /pub1/act/snasm/ directory.

Telephone

To talk to a technical support representative, call us at **(972) 240-6744**.

FAX

For technical support via FAX, send a detailed description to **(972) 240-5824**, and a technical support representative will contact you.

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