3780/2780 BSC/ RJE Emulation *for* Microsoft Windows® PCs *plus* Linux®, AIX®, Solaris®, and FreeBSD Unix Platforms
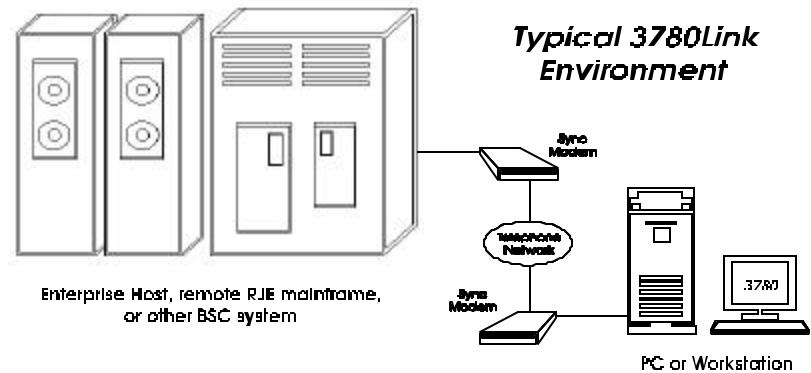
3780*Link* ™

IBM 3780/2780 BSC/RJE Emulation

Typical 3780Link Environment

Enterprise Host, remote RJE mainframe, or other BSC system

PC or Workstation

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Use 3780Link when your needs call for:

- **BSC Remote Job Entry (RJE)**

- **ATM machine connectivity**

- **Point-of-Sale Interfacing**

- **Electronic Data Interchange**

- **Electronic Funds Transfer**

- **Clearing House Transactions**

- **Insurance Claims Filing**

- **Mainframe File Transfer**

- **Remote Data Collection**

- **Other 3780 emulation needs**

3780Link™ provides full-featured IBM 3780/ 2780 BSC/RJE terminal emulation for a variety of computing platforms. You can use the intuitive menus for interactive operations or take advantage of the powerful script language for automated, unattended sessions. 3780Link is configurable for virtually any 2780 or 3780 environment.

Menu-Driven Interactive Interface
The 3780Link user interface utilizes pull-down menus and prompts; the Windows versions add toolbar buttons and context sensitive help. There are no confusing, cryptic commands to type in when using 3780Link.

Scripts for Unattended Operation
3780Link's script language commands automate the functions of 3780Link menus. There are commands for looping, branching, and error control. There's a command to run external processes, and others that permit programmatic control from a user-written application. Auto-dial, auto-answer, and time-activated commands are available.

Integrated Environment
Within the 3780Link environment you can connect, disconnect, send and receive files. Configuration settings are saved and automatically restored each time you connect. Current session statistics can be viewed instantly. Real-time status windows are visible during file transmission and reception. (Use

this environment to create and test scripts for later use during unattended operation.)

Comprehensive Log File
After a script has run, review a session by viewing 3780Link's log file, which records all commands, messages, and command results.

Application Integration
For developers, script sessions can be invoked from and controlled by your application to integrate file-oriented BSC connectivity into your custom applications or you may opt to use Serengeti's separate record-oriented BSCLIB API product for even tighter control.

3780Link as an NT Service
3780Link be installed as an NT Service on Windows NT, 2000, and XP. This permits automatic loading of 3780Link on system startup and completely unattended operation.

Multiple BSC/RJE Ports
3780Link supports multiple BSC sessions using SyncPCI and SmartSync/DCP intelligent multiport communications co-processor adapter(s). Up to 48 simultaneous, independent sessions from a single PC are supported.

Multiple Platforms
3780Link menus, script language, and the optional API, provide a consistent interface spanning Windows PCs and many Unix operating systems.

Basic Features
- Easy setup and configuration
- Save and use multiple configuration files
- Phone directory for frequently dialed hosts
- Up to 56K bps over dial-up or leased lines
- Detailed log file with date and time stamps
- Real-time session statistics
- Line trace for monitoring and diagnostics
- Auto-dial with UDS, V.25bis, SADL, and the AT (Hayes) command set modems
- Auto-answer with most modems
- Up to 48 BSC ports on a single system

Script Language
- Execute scripts from the command line, batch files, parent processes, or the 3780Link menu
- Supports unattended operation
- "Hot-reader" feature to send files automatically
- 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 Functionality
- Load 3780Link as an 3780 RJE server
- Submit commands to 3780Link from user programs (via Windows DDE; or named-pipes interface on Unix platforms)

3780/2780 BSC Features
- Complete IBM 3780/2780 BSC/RJE emulation
- Point-to-point bisync protocol
- Automatic ASCII - EBCDIC translation
- Vertical Forms Control (VFC) recognition
- Device selection support
- Supports half- or full-duplex modems
- Space compression and expansion (3780)
- Space truncation and expansion (2780)
- WACK, RVI, and TTD support
- Transparent text mode support
- Terminal identification support
- CRC-16 error checking

Enhanced BSC Features
- Receive files to console, printer, or disk
- Binary file mode to send and receive non-text files
- Automatic concatenation of outbound files if desired
- Ability to strip VFC and device selection sequences
- Communication buffers up to 4K bytes
- Configurable ASCII - EBCDIC translation tables
- Configurable inbound record separator recognition
- Configurable suppression of outbound record separators

Optional Programming Interface (BSCLIB™)
- Record-oriented Application Programming Interface (API)
- High-level, record-oriented BSC communications routines
- Use with C, C++, Java, Visual BASIC
- Portable across all supported platforms

Connection Options
- Hayes Optima Business Modem in AutoSync mode (no sync adapter required; most economical option where feasible)
- Serengeti SyncPCI™ single-port sync adapter (requires synchronous modem from Serengeti Systems or 3rd party)
- Serengeti SmartSync™/DCP intelligent 8-port sync adapter (requires synchronous modem for each enabled port; modems available from Serengeti Systems or 3rd party)

System Requirements
- Pentium or Athlon PC (or compatible)
- IBM RS/6000 or Sun Sparc
- Windows 98 / NT / 2000 / XP, Linux, AIX, Solaris, FreeBSD

It's Easy Doing Business With Serengeti Systems
- 3780Link "look & feel" demo program available
- Printed 3780Link documentation provided at no additional cost
- Technical support library on www.serengeti.com
- Development services for your custom applications

For more information, call **(800) 634-3122**

Serengeti Systems Incorporated

812 West 11th Street
Austin, TX 78701-2022

Voice: (512) 345-2211
Fax: (512) 480-8729
E-mail: sales@serengeti.com
WWW: http://www.serengeti.com

3780/2780 & Multi-Point Bisync API *for* Microsoft Windows® PCs *plus* Linux®, AIX®, Solaris®, and FreeBSD Unix Platforms

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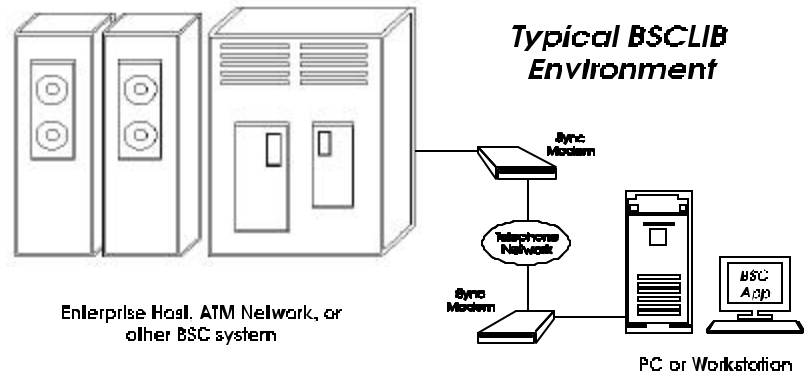
Use BSCLIB To Create Custom Applications For:

• **BSC Remote Job Entry (RJE)**

• **ATM Machine Connectivity**

• **Point-of-Sale Interfacing**

• **Electronic Data Interchange**

• **Electronic Funds Transfer**

• **Clearing House Transactions**

• **Insurance Claims Filing**

• **Mainframe File Transfer**

• **Remote Data Collection**

• **Other BSC Applications**

BSCLIB

BSC Protocol Developer's Tool Kit

Typical BSCLIB Environment

Enterprise Host, ATM Network, or other BSC system

PC or Workstation

BSCLIB™ is a software tool kit used to create customized application programs with embedded support for either the point-to-point Binary Synchronous Communications protocol specific to IBM 3780 and 2780 data terminals, or the multi-point version often required by 3270 terminals and other devices. This IBM protocol is also known as bisync or, simply, BSC. The tool kit provides a record-oriented Application Programming Interface (API) that works with many popular programming languages including Visual BASIC, C, C++, Java, and COBOL on Windows PCs and many Unix platforms.

BSCLIB Applications
BSCLIB can be used to create data collection and distribution systems that connect a PC with your customers, suppliers, plants, store locations, or other remote sites which utilize the BSC protocol. BSCLIB applications include accessing Electronic Data Interchange (EDI) mailboxes, creating PC-based VTAM and JES replacement systems, point-of-sale (POS) data collection, ATM machine connectivity, and other transaction-oriented BSC applications.

Application Programming Interface
The tool kit's API provides a straight-forward means of controlling the data flow between your application and a BSC communications link. This allows you to incorporate integrated, customized communication sessions that are totally transparent to end-users of your application.

With BSCLIB, accessing a BSC communications link is similar to record-oriented sequential file I/O. Your application opens a link, reads or writes fixed- or variable-length records, and closes the link. In most cases, your application is shielded from the details of bisync by BSCLIB's API. If lower-level control is needed, BSCLIB provides more advanced access.

Development vs. Run-Time Kits
BSCLIB is sold as both a Software Developer's Kit (SDK) and as a Run-Time Library (RTL) package. Reusable sample code is provided with the BSCLIB SDK. One SDK license is required to develop your application. Separate RTL license(s) are required for each instance of your application put into service.

Features
• 3780/2780 point-to-point emulation
• Multi-point (poll/select) emulation
• Vertical Forms Control (VFC) support
• Device selection & terminal ID support
• Space compression & expansion
• WACK, RVI, and TTD support
• Send and receive conversational replies
• Simplex (one-way) data feed support
• Transparent & binary file transfer mode
• ASCII Data Link Control support
• CRC-16 or LRC error checking
• Communication buffers up to 4K bytes
• Configurable ASCII - EBCDIC tables
• Up to 48 simultaneous sessions per PC
• Up to 56K bps via dial-up or leased lines
• Auto-dial, auto-answer modem support
• Applications portable across platforms

API Functions

The BSCLIB API provides the functions listed below to control the communications process. Sample programs which demonstrate each of these functions are included with the BSCLIB software development kit (SDK). The BSCLIB API calls are 100% compatible across all supported hardware and software platforms. For real-time and interactive applications, BSCLIB is designed to immediately return control to your application after an API function is called. This allows your application to continue while BSCLIB processes the request.

Partial List of BSCLIB API Functions

Opcode - Function	Subopcode - Description
0 INITIALIZE	0 Store Parameters
	1 Read Translation Table
	2 Store Translation Table
	10 Clear Received Terminal ID
1 INSTALL DRIVER	0 Install BSC Driver
	1 Force Reset & Install
2 OPEN	0 Auto-Dial Modem
	1 Open Communications
3 READ	0 Standard
	1 Abort Read
	2 Initiate RVI
	10 Fetch Received Terminal ID
	20 Store Multipoint 'Select' Addr
4 WRITE	0 Standard
	1 Send ETB Block
	2 Send ETX Block
	3 Send ETX Block and EOT
	4 Send Forward Abort
	10 Send Line Tickle
	11 Send EOT
	20 Store Multipoint 'Poll' Addr
5 ABORT I/O	-
6 I/O STATUS	-
7 STATISTICS	0 Initialize
	1 Read Statistics
8 TRACE	0 Initialize
	1 Start
	2 Stop
	3 Read Queue
	4 Reset
9 CLOSE	0 Standard
	1 Leave DTR On
10 UNINSTALL DRIVER	-
11 INTERNAL MODEM COMMANDS	0 Enter DATA Mode
	1 Enter TALK mode
	2 Issue modem command
	3 Return internal modem type
12 HARDWARE COMMANDS	0 Return hardware type
	1 Return driver serial number
	2 Request driver ownership
	3 Release driver ownership
	4 Raise DTR

Sample Program Code

The BSCLIB SDK is shipped with fully functional example programs written in C, C++, VB, and Java (including source code) that exercise all of the API functions.

> ### RISK-FREE GUARANTEE!
> If you are not completely satisfied with any Serengeti product, return it within 30 days of purchase for a refund of your purchase price.

BSCLIB Control Block

Your application communicates with BSCLIB by passing it the following control block. Other control blocks are also used to configure BSCLIB and to obtain session statistics.

Offset	Description	
0	Opcode	Return Code
2	Subopcode	State/Type
4	Flags	
6	32-bit Buffer Address	
8		
10	Parms/Write/Read Value	
12	Write/Read Count	
14	Time-out	
16	Auxiliary Flags/Shared Mem ID	
18	Trace Flags	Binary Value
20	Trace Byte #1	Trace Byte #2
22	Port Number	Board Number
24	Tail (always -1)	

High-Level Wrapper Functions

Beginning with v4.0, high-level wrapper functions for the Windows version of BSCLIB are available. These wrapper functions for C, C++, and Visual BASIC utilitze callback functions and/or COM to make application development even easier. Full source code is provided. Major functions include:

BSCSetup	BSCDial	BSCGetWriteFlags
BSCSetupFromINI	BSCRead	BSCAbort
BSCReleaseResources	BSCReadToETX	BSCStatus
BSCInitialize	BSCGetReadFlags	BSCStatistics
BSCInstall	BSCWrite	BSCTrace
BSCConnect	BSCWriteETB	BSCClose
BSCAnswer	BSCWriteETX	BSCUninstall

Supported Adapters and Modems

- Serengeti SyncPCI™ single port sync adapter
- Serengeti SmartSync™/DCP intelligent 8-port sync adapter
- AutoSync using Hayes Optima modems
- Most external synchronous modems

Supported Operating Systems

- Windows 98 / NT / 2000 / XP; AIX, Linux, Solaris, FreeBSD

For more information, call (800) 634-3122

Serengeti Systems Incorporated

812 West 11th Street
Austin, TX 78701-2022

Voice: (512) 345-2211
Fax: (512) 480-8729
E-mail: sales@serengeti.com
WWW: http://www.serengeti.com

812 West 11th Street
Austin, TX 78701

(512) 345-2211
sales@serengeti.com

1. CUSTOMER INFORMATION

Contact _____

Title _____

Company _____

Address _____

City, ST Zip _____

Phone _____FAX_____

Email _____

2. SHIP TO (IF DIFFERENT)

_____

_____

_____

_____

_____

_____

3. ORDER INFORMATION

ITEM	QTY	PRICE	TOTAL
1_____	____	_____	_____
2_____	____	_____	_____
3_____	____	_____	_____
4_____	____	_____	_____
5_____	____	_____	_____
SUB-TOTAL	-	-	_____
SALES TAX (SHIPMENTS WITHIN TEXAS ONLY)	-	CALL	_____
SHIPPING & HANDLING	-	CALL	_____
TOTAL DUE	-	-	_____

4. PAYMENT INFORMATION

- ☐ Check   Check #_____
- ☐ COD   Cashier's Check or Money Order
- ☐ Visa   Card #_____ Exp. Date ____/____
- ☐ MasterCard   Name on Card_____
- ☐ AmEx
- ☐ Wire Xfer   Signature_____

5. TERMS & CONDITIONS

SHIPPING & HANDLING: All pricing is FOB Serengeti's facility in Austin, Texas. Shipping options include Airborne Express, Select, or Two Day service. Federal Express, Emery, or other service upon request. Call for shipping and handling charges.

WARRANTY & SERVICE: Unless otherwise specified, all products include a 30 day money back guarantee. If for any reason you are not satisfied with your purchase within 30 days, return it to us in its original packaging for a full refund of the purchase price less shipping. Certain items may require a restocking fee. Serengeti's products include a 12 month defect warranty. See terms of purchase at **http://www.serengeti.com** for further details.

NOTICE: All product specifications, terms, pricing, and availability are subject to change without notice.