

Citrix
MULTIUSER LINK™

USER'S GUIDE



Citrix *MULTIUSER LINK*

USER'S GUIDE

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WELCOME to Citrix *MULTIUSER LINK*

The *Citrix MULTIUSER LINK User's Guide* is designed to be a task oriented, easy-to-use guide for the Citrix *MULTIUSER LINK* Terminal Emulator.

OVERVIEW

This guide is intended for both beginning users and those familiar with advanced computer topics.

MULTIUSER LINK is described in the following chapters:

Chapter 1: Introduction

- Provides an overview of *MULTIUSER LINK*.

Chapter 2: Installation

- Describes the hardware required to run *MULTIUSER LINK*, how to connect the hardware and how to install *MULTIUSER LINK*.

Chapter 3: Main Menu

- Describes how to use *MULTIUSER LINK*'s advanced features that are available through its main menu.

Chapter 4: File Transfer

- Describes the commands to download a file from a remote host running Citrix *MULTIUSER* or to upload a file to a remote host running Citrix *MULTIUSER*.

Chapter 5: Command Line Options

- Describes the command line options that are available when invoking *MULTIUSER LINK*. These options are particularly valuable when using *MULTIUSER LINK* from a batch file.

NOTATIONAL CONVENTIONS

To help you locate and interpret information easily, this reference uses specific typographic conventions and a standard syntax format and terminology. The following typographic conventions are used in this reference:

<u>Text Element</u>	<u>Notational Convention</u>
KEYS	Keys appear in boldface and uppercase.
<i>variables</i>	Variables are in lowercase italics.
USER INPUT	User input appears in uppercase and in a different typeface.
<i>FILENAMES, PROGRAM NAMES, and DEVICE DRIVERS</i>	Names of files, programs (including applications), and device drivers are in uppercase italics.
COMMANDS, DIRECTORY NAMES, DRIVE NAMES, and UTILITIES	These are always in uppercase.

SYNTAX CONVENTIONS

Syntax represents the order in which you must type a command-line command or utility name and any arguments and options that follow it. You may type commands, arguments, and options in either uppercase or lowercase letters. The following elements are used in syntax lines in this guide:

<u>Convention</u>	<u>Use</u>
KEYWORD	Elements shown in uppercase letters indicate the exact text to be entered. You may make your entry, however, either in uppercase or lowercase letters.
<i>variables</i>	Elements in lowercase italics are variables for which you must supply the text. For example, when <i>filename</i> appears, you should type the name of your file.
[]	Items in brackets are optional. To include the optional information described within the brackets, type only the information. Do not type the brackets themselves.
	A vertical bar means that you must choose from the option on either side of it. For example, ON OFF means that you are to enter either ON or OFF.

DRIVE: Specifies a disk drive. You need to specify a drive name along with a *filename* only if you are using a file that is **not** on the current drive. The colon (:) must be typed as shown.

PATH Specifies a complete directory path, using the following syntax:

[\\DIRECTORY...][\\DIRECTORY...]\\DIRECTORY

You need to specify a path along with a *filename* only if the file is not in the current directory.

CHAPTER 1

INTRODUCTION

FEATURES

MULTIUSER LINK is a terminal emulator that provides the ability to use a PC as an intelligent terminal connected to a Citrix *MULTIUSER* host. *MULTIUSER LINK* also provides access to bulletin boards, information services, and other PCs or mainframes.

Summary of the major features of *MULTIUSER LINK*:

- Connection to Citrix *MULTIUSER* system via standard RS-232C serial port
- File transfer with error-correcting protocol (enhanced ZMODEM)
- Dial or direct connection (modem or null modem cable)
- Easy to use menus (SAA/CUA compliant)
- Context sensitive help
- User customization
- Full dialing support for up to 200 host entries
- Auto redial
- ICA (intelligent console architecture) terminal emulation
- ASCII terminal emulation
- Full color and sound
- Local PC printing from Citrix *MULTIUSER* host

- Capture of screen or incoming text into a file
- DOS / OS/2 gateway
- Microsoft Windows 3.0 compatible

DEFAULT SETTINGS

The first time *MULTIUSER LINK* is run, two files are created, *CML.INI* and *CML.DIR*. These files are created in the directory specified by the user's HOME environment variable. If the HOME environment variable does not exist, these files are created in the directory that contains *CML.EXE*. If deleted or corrupted, these files are recreated the next time *MULTIUSER LINK* is run. The DOS or OS/2 command reference contains more information on creating environment variables.

The *MULTIUSER LINK* initialization file *CML.INI* contains initialization parameters for modem commands, modem connect strings and the hotkeys. These parameters are initialized to default values when the file is created and the user can change the values later. Two settings in the initialization file are of particular interest to the user: the main menu hotkey and the exit program hotkey. The default values for the hotkeys are as follows:

Main menu hotkey	SHIFT+F1
------------------	----------

Exit program hotkey	SHIFT+F3
---------------------	----------

If desired, these hotkeys can be changed by the user.

The *MULTIUSER LINK* host directory file *CML.DIR* contains the information needed to connect to host computers and keeps track of the default host entry. The default host directory file has no entries. The “Host Directory” function on the main menu can be used to create new host entries.

GETTING HELP

Context sensitive help is available while using *MULTIUSER LINK*. Pressing **F1** provides detailed help on the currently displayed screen or menu. Press **ESC** to resume running the program. The context sensitive help always knows “what you are doing” and displays help on the current task.

CHAPTER 2

INSTALLATION

HARDWARE REQUIREMENTS

Computer

IBM PC, XT, AT or PS/2 or 100% compatible personal computer

Memory

At least 220K of available RAM

Operating System

MS-DOS 3.3 or later; or any version of OS/2; or Citrix *MULTIUSER*

Disk Drives

One diskette drive (either 3½ or 5¼ inch, low or high density). *MULTIUSER LINK* can be used on diskette-only or fixed disk systems (300 KB of fixed disk space required)

Display

Monochrome display (MDA)
Color display (CGA)
Enhanced color display (EGA)
VGA monochrome display
VGA color display
8514 display

Display Adapter

Monochrome compatible adapter (MDA)
Color graphics adapter (CGA)
Enhanced graphics adapter (EGA)
VGA or PS/2 display adapter
8514 adapter

Modem

Virtually any full-duplex modem, Hayes-compatible or not, external or internal. A modem is not required for a direct cable connection to a local Citrix *MULTIUSER* host computer.

Serial Port

Required only when using an external modem or for direct connect.

Cable

A cable conforming to the EIA RS-232-C standard to connect the serial port to the external modem, or a null modem cable for direct cable connection. Appendix A contains cable and connection information.

CONNECTING THE HARDWARE

MULTIUSER LINK provides the ability to connect a PC to a Citrix *MULTIUSER* host by one of three methods:

- External, stand-alone modem
- Internal modem
- Direct cable connection

Installing an External, Stand-Alone Modem

Most PCs are equipped with at least one or two serial communications ports, COM1 and COM2, that can be connected to a modem. If the PC does not have an available port, it is necessary to buy and install one. The modem is attached to the serial port with a standard RS232 modem cable. Appendix A contains further information on cables.

If the modem has hardware switches, they must be set as follows:

DCD switch

The modem switch that affects the DCD (Data Carrier Detect) signal should be set so DCD turns on only when a connection exists, rather than being held constantly on.

DTR switch

The modem switch that affects the DTR (Data Terminal Ready) signal should be set so that the modem hangs up in response to DTR, rather than ignoring DTR.

Other switches

Other switches should be set so that the modem responds to Hayes commands, echoes modem commands, gives verbal (not numeric) responses, and uses full duplex when in data mode.

Installing an Internal Modem

The modem must be installed according to instructions in the modem manual. When its switches or jumpers are set, it is mandatory that no two devices in the PC use the same address (COM1, COM2, etc). Interrupt options should be enabled as described by the modem manual. Appendix A contains further information on serial port addresses and interrupt levels.

Installing a Direct Cable Connection

To connect a PC directly to a Citrix *MULTIUSER* host, either a null modem cable or a standard modem cable with a null modem adapter is needed. Appendix A contains further information on cables.

INSTALLING *MULTIUSER LINK*

MULTIUSER LINK is distributed on 5¼ (360KB) and 3½ (720KB) inch disks. Be sure to make backup copies of the diskettes. The license agreement allows *MULTIUSER LINK* to be used on only one PC at a time.

Installing *MULTIUSER LINK* Onto a Hard Disk

1. Start the PC using DOS or OS/2.
2. Put the *MULTIUSER LINK* Install Disk in drive A.
3. Type A: and press **ENTER**, to change to the A drive.
4. At the A> prompt, type **INSTALL** and press **ENTER**.
5. Follow the instructions given.
6. Remove the *MULTIUSER LINK* Install Disk.

Installing *MULTIUSER LINK* Onto a Dual Diskette Drive PC

1. Start the PC using DOS or OS/2.
2. Put the *MULTIUSER LINK* Install Disk in drive A.
3. Put a blank, formatted disk in drive B.
4. Type A: and press **ENTER**, to change to the A drive.
5. At the A> prompt, type **INSTALL** and press **ENTER**.
6. Follow the instructions given; make the destination path B:\.
7. Remove the *MULTIUSER LINK* Install Disk.

Installing *MULTIUSER LINK* Onto a Single Diskette Drive PC

The steps are the same as the ones given above, except make the destination path A:\. The INSTALL program prompts the user to change disks.

MULTIUSER LINK is now installed and ready to run.

CONFIGURING THE *MULTIUSER* HOST

Before using *MULTIUSER LINK*, the following steps must be followed to configure the *MULTIUSER* host.

1. Log into the Citrix *MULTIUSER* host using an administrator *loginname*.
2. Display the terminal configuration panel by entering the command CONFIG TERMINAL at the command line.
3. Move the selection bar to the line with the terminal subsystem on which the terminal or modem is attached.
4. Press F10 to go to the action bar; select Profile, then select New.
5. Type the terminal name you want to use and press ENTER.
6. Move the selection bar to the device name that is to be selected and press ENTER.
7. Move the selection bar to terminal type "ICA" and press ENTER.

8. The system automatically chooses the default parameters for the terminal type. The “Edit Terminal Profile” screen will then be displayed. At this point, make any required changes to the terminal profile (i.e. baud rate, hotkey definitions). Press F4 to save the changes.

When using *MULTIUSER LINK* on either OS/2 or Windows, it is necessary to modify the *MULTIUSER* host’s default hotkeys. Both OS/2 and Windows use the same values for their hotkeys as does the *MULTIUSER* host. The *MULTIUSER* host’s hotkeys are supported by changing their definition.

The following hotkey values are recommended:

Login switch	{shift}{ctrl}{tab}
Session switch	{shift}{alt}{esc}
Session direct	{shift}{ctrl}{esc}
Session create	{shift}{alt}{tab}
Reset terminal	{alt}{ctrl}{r}
Print screen	{alt}{p}
Print screen toggle	{alt}{ctrl}{p}
Ctrl+Break	{ctrl}{break}
Ctrl+C	{ctrl}{c}

Further information on configuring terminals for the Citrix *MULTIUSER* host is contained in Chapter 6 “Configuring Terminal Subsystems and Terminals” in the *Citrix MULTIUSER System Administrator’s Guide*.

STARTING *MULTIUSER LINK*

To start *MULTIUSER LINK* from a hard disk:

Change to the drive and directory that contains *MULTIUSER LINK* (for example, if *MULTIUSER LINK* is kept in a directory called \CML, enter CD \CML). Then type CML and press **ENTER** to start the DOS version or CML2 to start the OS/2 version.

To start *MULTIUSER LINK* from a diskette drive disk:

Put the *MULTIUSER LINK* working disk into the drive. With the prompt for that drive displayed, type CML and press **ENTER** to start the DOS version or CML2 to start the OS/2 version. Leave the diskette in the drive; *MULTIUSER LINK* must access the diskette during use.

When *MULTIUSER LINK* starts up, it displays the main menu unless a default host entry exists in the current host directory file. The first time *MULTIUSER LINK* is started, it displays the main menu. If there is a default host entry, the main menu hotkey (default: **SHIFT+F1**) can be pressed to display the main menu.

CHAPTER 3

MAIN MENU

INTRODUCTION

Most of *MULTIUSER LINK*'s advanced features are accessed through its main menu. The main menu is entered by typing the main menu hotkey. The main menu appears as follows:

Citrix MULTIUSER LINK Main Menu		
Major Functions	Utility Functions	File Functions
H o st Directory	P r ogram Info	C u rrent D i rectory ...
O S /2 G a teway	S e tup Menu	F i le List
	H a ng u p	C a pture Text
	E x it Program	
F1=Help F3=Exit		

Main menu items correspond to functions that can be performed from the main menu. To select an item from the main menu, either move the selection bar (highlighted bar) over the desired menu item and press **ENTER** or press the highlighted letter of the desired menu item. The sections in this chapter describe the function of the different menu items.

HOST DIRECTORY

The host directory function provides a host management facility that allows the user to maintain up to 200 host entries per host directory file. If the user has not specified a host directory file, with the /HOSTFILE option, the host directory file *CML.DIR* is loaded by default. The user can choose to maintain many host directory files.

Host Directory					
Actions					
	Name	Number	Port	Baud	Set
*> 1	MULTIUSER Host	1-305-555-3826	COM2	2400	ICA
2	Citrix Bulletin Board	1-305-346-9004	COM2	2400	E81
3	System Two (direct connect)		COM1	9600	ICA
4			COM1	2400	---
5			COM1	2400	---
6			COM1	2400	---
7			COM1	2400	---
8			COM1	2400	---
9			COM1	2400	---
10			COM1	2400	---
11			COM1	2400	---
12			COM1	2400	---
F1=Help F3=Exit F10=Actions SPACE=Tag ENTER=Select					

Host Entry

A host entry is one of the 200 entries within the host directory file. A valid host entry contains the necessary information to connect to a host computer by either a direct cable connection or by a modem connection. A host entry consists of the following information:

Name

Free form area used to hold information about the entry, usually the name of the host computer.

Number

The phone number of the host computer to be dialed. This is left blank for direct cable connections.

Device Name

The name of the asynchronous communications device that is opened for input and output. In DOS the supported devices are COM1, COM2, COM3 and COM4. In OS/2 the field may contain the name of any valid asynchronous communications device that has been loaded by the operating system, typically COM1 or COM2.

Baud Rate

The rate at which data flows across the serial cable in bits per second. Valid baud rates are 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600, 19200, 38400, 57600.

Connection Type

The type of connection *MULTIUSER LINK* establishes. If modem is selected, *MULTIUSER LINK* establishes a modem connection. If direct is selected, *MULTIUSER LINK* establishes a direct cable connection.

Emulation Mode

The terminal emulation mode *MULTIUSER LINK* uses. If Intelligent Console Architecture (ICA) is selected, input is interpreted as ICA packets and the output is encoded as keyboard scan codes. For ASCII mode, the input and output is ASCII data and no interpretation is performed.

Parity

A bit inserted between bytes in a serial data stream primarily used for determining the integrity of the data. Valid values are None, Odd or Even. For ICA this value is preset to None and cannot be changed.

Data Bits

This number indicates the number of bits that make up a byte or unit of data. Valid values are 7 or 8. For ICA this value is preset to 8 and cannot be changed.

Stop Bits

The number of bits inserted between bytes in a serial data stream to indicate the end of one byte and the beginning of another byte. Valid values are 1 or 2. For ICA this value is preset to 1 and cannot be changed.

As discussed above, there are two types of emulation modes: ICA and ASCII. Depending on the host computer for which the connection is being made, the user must select the appropriate emulation mode to ensure proper operation.

If the user is calling a Citrix *MULTIUSER* host, the emulation mode must be ICA to take advantage of the advanced features of Citrix *MULTIUSER* and *MULTIUSER LINK*. An ICA host entry allows the user the choice of values for name, phone number, device name, baud rate and connection type. The ICA architecture communicates using ICA packets and keyboard scan codes, so it is inappropriate for use with non-*MULTIUSER* systems.

If the user is calling a non-*MULTIUSER* system, such as an ASCII bulletin board, the emulation mode must be ASCII. An ASCII host entry allows the user to select the values for parity, stop and data bits in addition to the fields allowed by an ICA host entry. The ASCII emulation mode communicates with ASCII data and should work with most ASCII-based systems.

Under OS/2, *MULTIUSER LINK* ASCII emulation supports ANSI escape sequences. Under DOS the appropriate ANSI.SYS device driver must be loaded. This can be done by placing the statement `DEVICE=C:\DOS\ANSI.SYS` in the *CONFIG.SYS* file. The DOS Command Reference contains further information on the `DEVICE=`statement.

The set column, of the host directory screen, describes the line settings of the host entry. ICA host entries have static settings and are noted with the value ICA. ASCII host entries have their corresponding values for parity, data and stop bits, (e.g., E71). An empty entry is denoted with three dashes.

In addition to having one of the two emulation modes, ICA or ASCII, each host entry has a connection type. There are two connection types, modem and direct. Depending on the connection type of the selected entry, *MULTIUSER LINK* either makes a direct cable connection or initiates a modem connection (i.e., dial a phone number).

Actions

Actions can be performed on a selected host entry by moving the selection bar over the entry and pressing **ALT** or **F10**. **ALT** or **F10** toggles between the action bar and the list of entries. When the action bar is selected, a pull down menu is displayed. To select an action, move the highlighted bar over the action and press **ENTER** or press the highlighted letter of the action desired. The actions include editing, finding and deleting host entries.

Edit Host Entry

The edit option is used to make changes to the currently highlighted host entry or to add a new entry. The selection bar must be positioned over the entry to be edited. **ALT** is then pressed and the edit action is selected. The information is displayed in a window where it can be modified. A typical window appears below.

Edit a Host Entry

Name	[MULTIUSER Host]
Number	[1-305-555-3826]
Device Name	[COM2]
Baud Rate	[2400]	
Connection Type .	(x) Modem	() Direct
Emulation Mode .	(x) ICA	() ASCII
Parity	(x) None	() Odd () Even
Data Bit	() 7	(x) 8
Stop Bits	(x) 1	() 2

F1=Help F2=Save F3=Exit F4=File

DIRECTION keys move the selection bar among the fields in the window.

Any of the first six fields can be modified for either type of emulation mode, ICA or ASCII. The last three fields (Parity, Data Bits and Stop Bits) can only be modified for ASCII entries, since these fields in ICA entries have preset values that cannot be changed. To make a change in a field where there are multiple choices, move the selection bar over the desired selection and press **SPACE**.

Changes are written to the host directory file by pressing either F2 or F4. If the user wishes to discard the modifications, press F3.

Find Host Entry

The find option locates a specific entry by matching the name field to the string provided by the user. The search is not case sensitive (e.g., Citrix would match CITRIX) and starts from location of the selection bar. If a matching entry is found, the selection bar is moved to the matching location. If no match is found, a warning popup is displayed and the user is given the choice to re-enter the string or terminate the search.

Delete Host Entry

The delete option allows the user to delete the entry under the selection bar. If a non-empty entry is selected for deletion, the user is prompted to validate the delete action. Once the entry has been deleted, the host directory file is automatically updated.

Connecting to a Host

Connecting to a host involves terminating the currently active connection, if one exists, and establishing the new connection. An asterisk "*" to the left of an entry denotes it as the active entry. Connecting to a host is accomplished by selecting a host entry. To select a host entry, the user moves the selection bar over the desired entry and presses **ENTER**. If there is already an active connection, the user is prompted to verify termination of the active connection. If the user chooses not to terminate the active connection, *MULTIUSER LINK*'s state remains unchanged and the active connection remains active.

Direct Connection

If the selected entry is a direct cable connection, several activities happen. The connection is established and verified, *MULTIUSER LINK* is placed in terminal mode and communication with the host begins. If any errors occurred, the user is notified by a popup message and the connection is aborted. The user can either correct the error in the entry and retry or choose an alternate entry.

Modem Connection

If the selected entry is a modem entry, the call status popup appears and *MULTIUSER LINK* initiates a call to the selected host computer.

The call status popup is provided to inform the user on the progress of the current call. When a connection is made, the call status popup notifies the user with a bell sound and puts *MULTIUSER LINK* in terminal mode. If the call fails, *MULTIUSER LINK* attempts to retry the call. At any time during the calling process before a connection is established, the user can cancel the call by pressing F3. A typical call status popup appears as follows:

Call Status	
Name	MULTIUSER Host
Number	1-305-555-3826
Parameters	COM2 : 2400, N, 8, 1
Status	Call in Progress
Time Left	59
Retry Count	1
F3=Cancel	

The call status popup appears each time a call is initiated. The popup consists of the following information:

Name

The name of the host computer being called.

Number

The phone number being dialed.

Parameters

The current values for device name, baud rate, parity, data and stop bits.

Call Status

Progress of the active call. Descriptions of the various states are listed below.

<u>Action</u>	<u>Description</u>
Initializing Modem	<i>MULTIUSER LINK</i> is in the process of initializing the modem. The modem initialization string is being sent.
Initialization Failed	For some reason the modem failed to initialize correctly. The modem initialization string should be checked for possible errors.
Call in Progress	The modem has been initialized and the dialing string has been sent. <i>MULTIUSER LINK</i> is waiting for an event such as a connection or busy signal.

<u>Action</u>	<u>Description</u>
CANCELLED	<p>The user has pressed F3 and the call has been canceled. <i>MULTIUSER LINK</i> terminates the call by sending the hangup string to the modem. Control is returned to the host directory screen. There is no longer an active connection.</p>
CONNECTED	<p>A valid connection string was returned. After the connection is established a bell sounds and <i>MULTIUSER LINK</i> is placed in terminal mode.</p>
BUSY	<p>The modem detected a busy signal. The call status popup remains for five seconds, the retry count is incremented and the number is redialed.</p>
VOICE	<p>The modem detected a voice or non-modem tone. Since there is no reason to redial the number, the call status popup remains in place until the user presses F3 to terminate the call.</p>
NO CARRIER/ NO DIAL TONE	<p>The modem detected either no carrier or no dial tone. The call status popup remains for five seconds, the retry count is incremented and the number is redialed.</p>

<u>Action</u>	<u>Description</u>
TIME OUT	The "Time Left" value reached zero without a signal from the modem being detected. The call status popup remains for five seconds, the retry count is incremented and the number is redialed.
Time Left	The number of seconds left for the current call. The value is initialized from the "Wait for Connection" time and decremented once a second. If zero is reached, <i>MULTIUSER LINK</i> generates a TIME OUT and recycles the call attempt. The "Wait for Connection" time can be changed in the modem command menu, within the setup menu.
Retry Count	The number of times the call has been retried. The value is incremented each time the call is retried, regardless of the reason.

Current Entry

The current entry is the most recently connected host entry. At program initialization time, the current entry and the default entry are usually the same. An entry is made current by selecting it, (see discussion on "Connecting" above). An asterisk "*" to the left of an entry denotes it as the current entry. If no asterisk is present, there is no currently active connection.

Default Entry

The default entry is the host entry that is automatically selected at program initialization time. A host directory file may or may not contain a default entry. A greater than ">" sign to the left of an entry denotes it as the default entry.

To tag an entry to be the default entry, move the selection bar over the desired entry and press **SPACE**. If the entry selected is not currently the default entry, it is tagged as such. Only one entry can be the default entry, so the previous default entry, if any, is untagged. If the entry is currently the default entry, the tag is removed and no default entry exists. The host directory file is automatically updated.

GATEWAY

The gateway function is provided to allow the user to execute a command processor without terminating *MULTIUSER LINK* or the current connection. For DOS, the command processor *COMMAND.COM* is executed. For OS/2, the command processor *CMD.EXE* is executed. In either case, the command processor must be in one of the directories referenced by the PATH environment variable. The DOS or OS/2 command reference contains more information on the PATH environment variable.

To return to *MULTIUSER LINK* from the command processor, type EXIT at the command prompt and press **ENTER**.

PROGRAM INFORMATION

The program information function is provided to display information about the current program settings. Information displayed includes the program serial number, line settings, current drive and directory, capture file, program times and errors.

Program Information	
Serial Number ..	: PMUL-01000-91112-000-001
Line Settings ..	: COM2 : 2400,N,8,1
Directory	: C:\CML
Capture File ...	: Closed
Start Time	: 14:28:25
Current Time ...	: 14:32:14
Elapsed Time ...	: 00:03:49
Packet Errors ..	: 0

F1=Help F3=Exit

The program serial number is a unique identifier assigned to each copy of *MULTIUSER LINK* at manufacturing time. The line settings reflect the settings for the active connection. If no connection is active, this field displays "None Active." The directory entry lists the current drive and directory. The capture file shows the file being used to capture incoming text. The three program times include the time *MULTIUSER LINK* was invoked, the time the Program Information menu was selected and the total time *MULTIUSER LINK* has been active. The error field is the count of the number of ICA packets lost due to transmission failures.

SETUP MENU

The setup menu is used to modify the user-configurable portions of the *CML.INI* file. This file contains the *MULTIUSER LINK*'s hotkey definitions, modem commands and modem result message strings. To modify any one of these, either move the selection bar (highlighted bar) over the desired menu item and press **ENTER** or press the highlighted letter of the desired menu item.

LINK Hotkeys

MULTIUSER LINK supports two user-definable hotkeys, the main menu hotkey and the exit program hotkey. The main menu hotkey is used to invoke the main menu and the exit program hotkey is used to terminate the *MULTIUSER LINK* program.

Link Hotkeys	
Main Menu Hotkey	[{shift}{f1}]
Exit Program Hotkey	[{shift}{f3}]
F1=Help F2=Save F3=Exit F4=File F5=Default	

MULTIUSER LINK's hotkeys are defined as a combination of two keys, one shift key and one non-shift key. To change a hotkey, the user moves the selection bar over the entry to be changed and types in a hotkey meta string. Hotkey meta strings represent the actual hotkey. A meta string is surrounded by braces ({}). A list of the valid shift key and non-shift key meta strings follow:

SHIFT KEYS

{alt}	Either ALT key
{ltalt}	Left ALT key
{rtalt}	Right ALT key
{ctrl}	Either CTRL key
{ltctrl}	Left CTRL key
{rtctrl}	Right CTRL key
{shift}	Either SHIFT key
{ltshift}	Left SHIFT key
{rtshift}	Right SHIFT key

NON-SHIFT KEYS

{esc}	Escape key
{f1} thru {f12}	Function key F1 , etc.
{minus}	- on keypad
{plus}	+ on keypad
{star}	* on keypad

The user should exercise caution when choosing to use left or right SHIFT KEYS as the hotkey shift keys. Some older keyboards do not support the distinction between left and right SHIFT KEYS. When in doubt, use the more ambiguous SHIFT KEY (e.g., {alt}, {ctrl} or {shift}) instead.

Main Menu Hotkey

The main menu is invoked from terminal mode by pressing the main menu hotkey. By default the main menu hotkey is {shift}{f1}, but it can be modified by the user. To modify the main menu hotkey, the user enters the hotkey meta string that defines the hotkey combination of choice.

Exit Program Hotkey

The program is exited from terminal mode or any menu screen by pressing the exit program hotkey. By default the exit program hotkey is {shift}{f3}, but it can be modified by the user. To modify the exit program hotkey, the user enters the meta string that defines the hotkey combination of choice.

Modem Commands

The modem commands define the strings and parameters that control the function of the modem. Strings are sent to the modem to initialize, dial and hangup. Parameters determine how long to wait for a connection and how to hangup the modem. It is sometimes necessary to send control codes to the modem. To accomplish this, *MULTIUSER LINK* represents control codes as two character pairs. The character ^ (caret) followed by a letter, represents a control code.

Modem Commands	
Initialization Command [ATE1 S7= 255 S11=70 V1 X1 S0=0^M]
Dialing Command Prefix [ATDT]
Dialing Command Suffix [^M]
Hangup Command [~~~+++~~~ATH0^M]
Wait for Connection [60] seconds
Use DTR to Hangup (x) Yes () No
F1=Help F2=Save F3=Exit F4=File F5=Default	

Some useful control codes are listed below.

^H Backspace

^J Line feed

^M Carriage return

MULTIUSER LINK also defines a delay character, the ~ (tilde). The delay character can be inserted in a modem command string where a delay is required. A delay of 1/2 of a second is generated when the delay character is encountered.

The initialization command is sent to the modem prior to attempting to dial a remote host. For further details, the user should consult the modem's reference manual.

The dialing command prefix is sent to the modem prior to sending the phone number. The string tells the modem to dial and is typically either ATDT (for tone dialing) or ATDP (for pulse dialing). For further details, the user should consult the modem's reference manual.

The dialing command suffix is sent to the modem after sending the phone number. The string tells the modem to begin dialing the number and is typically the carriage return control code ^M.

The hangup command instructs the modem to hangup the phone line.

The “Wait for Connection” parameter specifies how long *MULTIUSER LINK* waits for a connection after dialing before it generates a TIMEOUT signal.

The “Use DTR to Hangup” parameter specifies whether or not *MULTIUSER LINK* drops the DTR line after sending the hangup command when terminating a modem connection.

The user can modify these entries by moving the selection bar over the entry and entering the desired value. All fields have default values that are Hayes compatible. The selected entry’s default value can be restored by pressing F5. Changes are saved by pressing F2 or F4. Changes are discarded by pressing F3.

Modem Result Messages

The modem result messages define the strings that the modem returns to signal the various connect states. When dialing a number, *MULTIUSER LINK* uses these strings to determine whether or not the connection was established. If one of the non-connection strings is returned, *MULTIUSER LINK* attempts to redial the number after a five second delay.

Modem Result Messages		
300 Baud Connect Message....	[CONNECT^M]
1200 Baud Connect Message...	[CONNECT 1200^M]
2400 Baud Connect Message...	[CONNECT 2400^M]
4800 Baud Connect Message...	[CONNECT 4800^M]
9600 Baud Connect Message...	[CONNECT 9600^M]
19200 Baud Connect Message..	[CONNECT 19200^M]
No Carrier Message	[NO CARRIER^M]
Busy Message	[BUSY^M]
Voice Message	[VOICE^M]
Timeout Message	[TIMEOUT^M]

F1=Help F2=Save F3=Exit F4=File F5=Default

The user can modify these entries by moving the selection bar over the entry and entering the desired string. All fields have default values that are Hayes compatible. The selected entry's default value can be restored by pressing **F5**. Changes are saved by pressing **F2** or **F4**. Changes are discarded by pressing **F3**.

HANGUP

The hangup function allows the user to disconnect from the current connection. If the connection is direct, *MULTIUSER LINK* prompts the user for verification before the DTR signal is dropped. If the connection is modem, *MULTIUSER LINK* hangs up in one of two ways described below.

If “Use DTR to Hangup” has been selected in the MODEM COMMANDS menu, *MULTIUSER LINK* hangs up the modem by dropping the DTR signal to the modem after the hangup command string has been sent to the modem. If DTR control has not been selected, only the hangup command string is sent to the modem. In either case, the user is prompted before the action is taken.

EXIT PROGRAM

The exit program function is selected from terminal mode by entering the exit program hotkey or by selecting the exit program function from the main menu. The exit program function is the correct way to terminate *MULTIUSER LINK*. If there is a connection, the user is prompted for verification before the program is terminated. If the connection was by modem, the hangup string is sent to the modem. If the connection is direct or the DTR hangup has been selected, the DTR signal is pulled low to hangup the connection.

CURRENT DIRECTORY

The current directory function allows the user to view and change the current drive and directory. This drive and directory is used as the current PC directory for file uploading and downloading. The syntax for the input string is a valid pathname, [*drive:*][*path*], where [*drive:*] is any valid drive letter and [*path*] is any valid path on the drive. The drive letter is optional and, if not specified, the path is applied to the current drive.

FILE LIST

The file list function is analogous to the DIR command of DOS. The file list function displays a list of files specified by the input string. The syntax for the input string is the same as for the DIR command of DOS, [*drive:*][*path*][*filename*], where [*drive:*] is any valid drive letter, [*path*] is any valid path on the drive and [*filename*] is any valid DOS file. The drive letter and path are optional. If a filename is specified, information is displayed on that file alone. Wildcard characters can be used to get information about groups of files with similar names — for example, to compare the dates and sizes of several files with the same extensions.

Files are displayed one page at a time. When more files match the requested filename than can fit on a screen, "SPACE=More" is displayed at the bottom of the window. SPACE must be pressed to view the next page of files. After viewing the files, F3 can be pressed to return to the main menu. More detailed information on the DIR command is available in the DOS Command Reference.

CAPTURE TEXT

The capture text function is provided to allow the user to capture one screen of data or all incoming text into a file as it is displayed on the screen. An asterisk "*" to the left of a capture function denotes it as the currently selected function.

Capture Text	
Capture File....	[CAPTURE.TXT]
Open Mode	(x) Preserve () Overwrite () Append
Capture Functions	
Begin Capture	
Suspend Capture	
Resume Capture	
*End Capture	
Screen Capture	
F1=Help F2=Save F3=Exit F4=File	

To change the Capture File, move the selection bar (highlighted bar) over the entry and make the desired change. To change the Open Mode, move the selection bar over the desired mode and press **SPACE**. Changes are written by pressing either **F2** or **F4**. If the user wishes to discard the modifications, press **F3**.

Capture File

The name of the file where captured data is written. The file name is a valid DOS filename of the form *[drive:][path][filename]*, where *[drive:]* is any valid drive letter, *[path]* is any valid path on the drive and *[filename]* is any valid DOS file. The drive letter and path are optional and default to the current drive and path.

Open Mode

One of three modes are available to open the capture file. If the file does not exist, it is created. The open mode must be one of the following:

Preserve

Do not overwrite an existing file.

Append

Add text to the end of an existing file.

Overwrite

Replace an existing file contents.

Capture Functions

To select an item from the capture functions, either move the selection bar over the desired function and press **ENTER** or press the highlighted letter of the desired capture function. Capture functions are:

Begin Capture

Start writing incoming text to the capture file. Capture of incoming text can be turned on and off as often as desired, either capturing to a different file each time or to the same file.

Suspend Capture

Suspend capture of incoming text. Used to capture separate segments of text into a single file, and avoid capturing unwanted text that arrives between segments.

Resume Capture

Resume capture after it has been suspended.

End Capture

Stop capture of incoming text and close the capture file.

Screen Capture

Write the contents of the screen to the capture file.

CHAPTER 4

FILE TRANSFER

INTRODUCTION

MULTIUSER LINK provides the ability to use a PC as an intelligent terminal connected to a Citrix *MULTIUSER* host. When connected to a remote *MULTIUSER* host, files can be transferred between the PC and host.

This chapter describes the commands to download a file from a remote host running Citrix *MULTIUSER* or to upload a file to a remote host running Citrix *MULTIUSER*. (“Downloading” means requesting and receiving a file from the *MULTIUSER* host. Sending a file to the Citrix *MULTIUSER* host is called “uploading.”) When a file from the *MULTIUSER* host is downloaded, a copy of the contents of the file is sent to the PC and a file is created to store it.

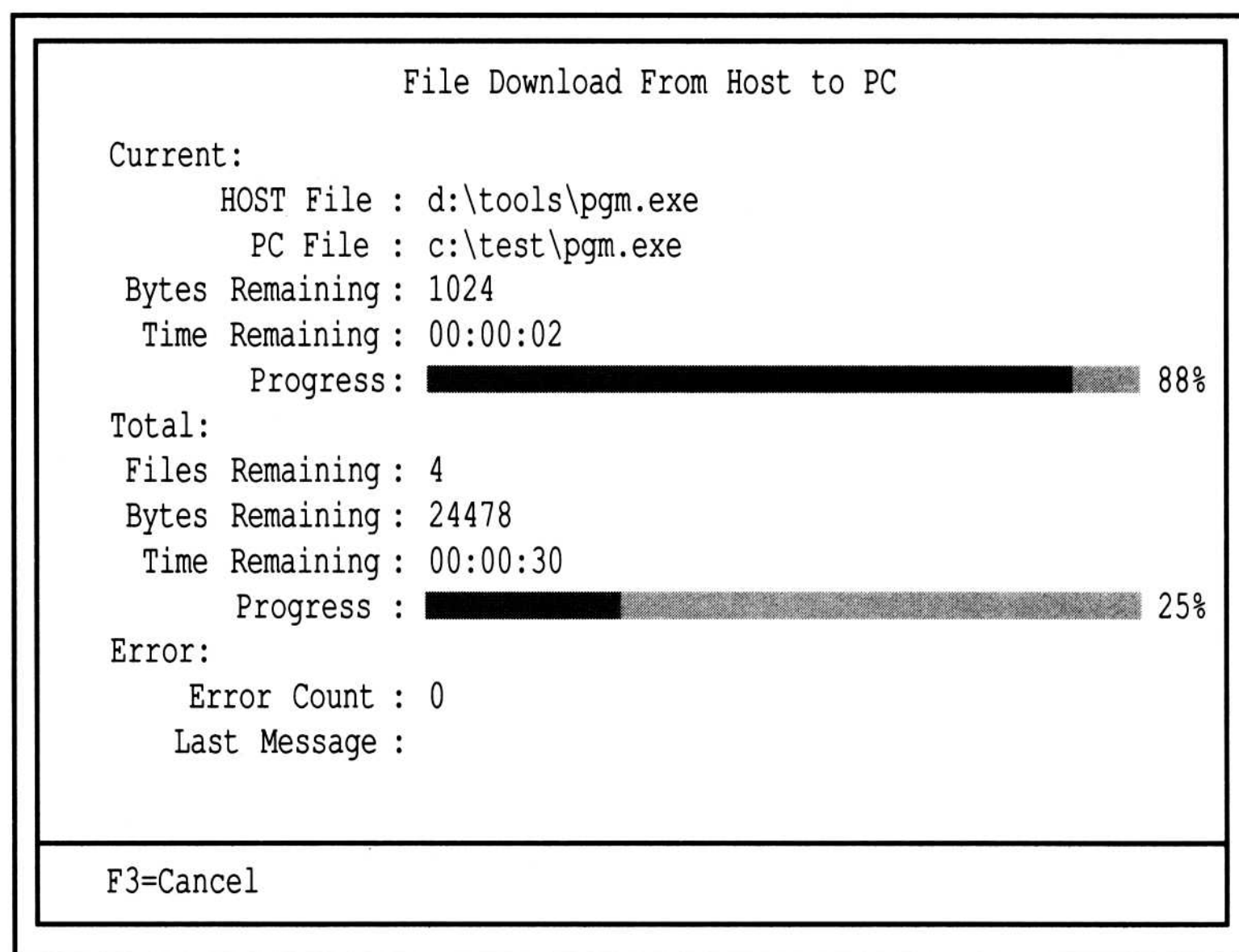
If the PC is not already connected to the host, the procedures in the previous chapters must be followed to connect it to the *MULTIUSER* host.

To download the remote *MULTIUSER* directory D:\TOOLS to the PC directory C:\TEST, the following must be entered from the command line on the *MULTIUSER* host:

DOWNLOAD D:\TOOLS C:\TEST

MULTIUSER LINK displays a window in which the progress of the transfer is monitored. The file transfer can be canceled before it is completed by pressing F3. The syntax of the UPLOAD and DOWNLOAD programs is very similar to the DOS XCOPY command.

When the file transfer is complete, *MULTIUSER LINK* notifies the user with a popup message.



UPLOAD (Copy Groups of Files and Subdirectories from PC to Host)

Description

Copies files and directories, including any subdirectories, from the PC running *MULTIUSER LINK* to a Citrix *MULTIUSER* host.

Syntax

```
UPLOAD  [drive1:][path1][filename1]
        [drive2:][path2][filename2]
        [/S] [/OVERWRITE] [/BATCH] [/V] [/?]
```

Parameters

drive1:

Specifies the *drive* on the PC that contains the disk from which files are copied (the source disk). This argument can be used by itself, with *path1* or with *path1* and *filename1*. If only *drive1* is specified, the UPLOAD utility copies all PC files in the current directory on that drive to the Citrix *MULTIUSER* host.

path1

Specifies the directory where the PC files to be copied are located. If *path1* is specified without *drive1* or *filename1*, UPLOAD copies all PC files in the specified directory on the current drive to the Citrix *MULTIUSER* host.

filename1

Specifies the name of the PC file to be copied. Wildcard characters can be used to copy multiple files from the PC to the Citrix *MULTIUSER* host.

drive2:

Specifies the *drive* on the Citrix *MULTIUSER* host that contains the disk to which files are copied (the destination disk). This argument can be used by itself, with *path2* or with *path2* and *filename2*. If only *drive2* is specified, the UPLOAD utility copies the PC files to the current directory on that drive on the Citrix *MULTIUSER* host and uses the original *filenames*.

path2

Specifies the directory on the Citrix *MULTIUSER* host to which the files are copied. If *path2* is specified without *filename2*, UPLOAD uses the original *filenames*. If *path2* is specified without *drive2*, the current host drive is used.

filename2

Specifies the *filename* on the Citrix *MULTIUSER* host to which the file is copied.

Options

/S

Copies directories and subdirectories. If this option is omitted, UPLOAD works within a single directory.

/OVERWRITE

Copies over existing files. By default UPLOAD does not overwrite existing files.

/BATCH

Disables prompt when UPLOAD is done copying the files. This option should be used when using UPLOAD from a batch file.

/V (verbose)

Displays information about the actions being performed.

/? (help)

Displays the syntax for the utility and information about the utility's options.

Remarks

If no destination is specified, UPLOAD copies the specified files to the current drive and directory on the Citrix *MULTIUSER* host.

All files or directories copied by the UPLOAD utility have the same date and time as the original. Any extended attributes are discarded.

Read (R) permission is required on the source file(s) and Create/Modify (C/M) permission on the destination file(s). See the *Citrix MULTIUSER System Administrator's Guide* for additional details on read/create/modify.

UPLOAD returns an exit code when it completes; that is, it sends a number back to the system to tell it whether UPOAD ran successfully or not. If UPLOAD ran successfully, it returns an exit code of zero; if it did not run successfully, it returns an exit code greater than zero. A batch file can check this value and specify what command is to be executed by placing the command IF ERRORLEVEL immediately following the line that runs UPLOAD. The *Citrix MULTIUSER User's Guide* contains more information on batch files. When using UPLOAD from a batch file, the /BATCH option should be used.

The following exit codes are returned by UPLOAD:

- 0 : successful transfer
- 1 : invalid command line parameter
- 2 : invalid terminal type (must be *MULTIUSER LINK*)
- 3 : unable to open device (e.g. COM1)
- 4 : unable to set device parameters (e.g. flow control)
- 5 : UPLOAD received a kill signal
- 6 : error transferring file(s)

Examples

To copy the PC file *TEST.EXE* to the current drive and directory on the Citrix *MULTIUSER* host, the following is entered:

```
UPLOAD C:\BIN\TEST.EXE
```

To copy all files in the directory C:\DATA on the PC to the current drive and directory on the Citrix *MULTIUSER* host, the following is entered:

```
UPLOAD C:\DATA\*
```

To copy the file *COMPANY.NEW* in the current directory on the current drive on the PC to the CUSTOMER directory on drive C on the Citrix *MULTIUSER* host, the following is entered:

```
UPLOAD COMPANY.NEW C:\CUSTOMER
```

To copy all files, directories, and subdirectories on the disk in drive A of the PC to the current directory of drive C of the Citrix *MULTIUSER* host and to overwrite existing files, the following is entered:

```
UPLOAD A:\ C: /S /OVERWRITE
```

To copy all files and subdirectories in the directory C:\USR\SRC on the PC to the directory C:\USR\SRC on the Citrix *MULTIUSER* host, the following is entered:

```
UPLOAD C:\USR\SRC C:\USR\SRC /S
```

DOWNLOAD (Copy Groups of Files and Subdirectories from Host to PC)

Description

Copies files and directories, including any subdirectories, from a Citrix *MULTIUSER* host to the PC running *MULTIUSER LINK*.

Syntax

```
DOWNLOAD [drive1][:path1][filename1]  
          [drive2][:path2][filename2]  
          [/S] [/OVERWRITE] [/BATCH] [/V] [/?]
```

Parameters

drive1:

Specifies the *drive* on the Citrix *MULTIUSER* host that contains the disk from which files are copied (the source disk). This argument can be used by itself, with *path1* or with *path1* and *filename1*. If only *drive1* is specified, the DOWNLOAD utility copies all Citrix *MULTIUSER* files in the current directory on that drive to the PC.

path1

Specifies the directory where the remote Citrix *MULTIUSER* files to be copied are located. If *path1* is specified without *drive1* or *filename1*, DOWNLOAD copies all remote Citrix *MULTIUSER* files in the specified directory on the current drive to the PC.

filename1

Specifies the name of the remote Citrix *MULTIUSER* file to be copied. Wildcard characters can be used to copy multiple files from the Citrix *MULTIUSER* host to the PC.

drive2:

Specifies the *drive* on the PC that contains the disk to which files are copied (the destination disk). This argument can be used by itself, with *path2* or with *path2* and *filename2*. If only *drive2* is specified, the DOWNLOAD utility copies remote Citrix *MULTIUSER* files to the current directory on that drive on the PC and uses the original *filenames*.

path2

Specifies the directory on the PC to which the files are copied. If *path2* is specified without *filename2*, DOWNLOAD uses the original *filenames*. If *path2* is specified without *drive2* the current PC drive is used.

filename2

Specifies the *filename* on the PC to which the file is copied.

Options

/S

Copies directories and subdirectories. If this option is omitted, DOWNLOAD works within a single directory.

/OVERWRITE

Copies over existing files. By default DOWNLOAD does not overwrite existing files.

/BATCH

Disables prompt when DOWNLOAD is done copying the files. This option should be used when using DOWNLOAD from a batch file.

/V (verbose)

Displays information about the actions being performed.

/? (help)

Displays the syntax for the utility and information about the utility's options.

Remarks

If no destination is specified, DOWNLOAD copies the specified files to the current PC drive and directory.

All files or directories copied by the DOWNLOAD utility have the same date and time as the original. Any extended attributes are discarded.

Read (R) permission is required on the source file(s) and Create/Modify (C/M) permission on the destination file(s). See the *Citrix MULTIUSER System Administrator's Guide* for additional details on read/create/modify.

DOWNLOAD returns an exit code when it completes; that is, it sends a number back to the system to tell it whether DOWNLOAD ran successfully or not. If DOWNLOAD ran successfully, it returns an exit code of zero; if it did not run successfully, it returns an exit code greater than zero. A batch file can check this value and specify what command is to be executed by placing the command IF ERRORLEVEL immediately following the line that runs DOWNLOAD. The *Citrix MULTIUSER User's Guide* contains more information on batch files. When using DOWNLOAD from a batch file, the /BATCH option should be used.

The following exit codes are returned by DOWNLOAD:

- 0 : successful transfer
- 1 : invalid command line parameter
- 2 : invalid terminal type (must be *MULTIUSER LINK*)
- 3 : unable to open device (e.g. COM1)
- 4 : unable to set device parameters (e.g. flow control)
- 5 : DOWNLOAD received a kill signal
- 6 : error transferring file(s)

Examples

To copy the file *TEST.EXE* on the Citrix *MULTIUSER* host to the current drive and directory on the PC, the following is entered:

```
DOWNLOAD C:\BIN\TEST.EXE
```

To copy all the files in the directory C:\DATA on the Citrix *MULTIUSER* host to the current drive and directory on the PC, the following is entered:

```
DOWNLOAD C:\DATA\*
```

To copy the file COMPANY.NEW in the current directory on the current drive of the Citrix *MULTIUSER* host to the CUSTOMER directory on drive C of the PC, the following is entered:

```
DOWNLOAD COMPANY.NEW C:\CUSTOMER
```

To copy all files, directories, and subdirectories on the disk in drive A of the Citrix *MULTIUSER* host to the current directory of drive C of the PC and to overwrite existing files, the following is entered:

DOWNLOAD A:\ C: /S /OVERWRITE

To copy all files and subdirectories in the directory C:\USR\SRC on the Citrix *MULTIUSER* host to the directory C:\USR\SRC on the PC, the following is entered:

DOWNLOAD C:\USR\DATA C:\USR\DATA /S

CHAPTER 5

COMMAND LINE OPTIONS

CML (CITRIX *MULTIUSER LINK* TERMINAL EMULATOR)

Description

MULTIUSER LINK provides the ability to use a PC as an intelligent terminal connected to a Citrix *MULTIUSER* host. Although only DOS examples are used in this section, all parameters are valid for both DOS (CML) and OS/2 (CML2) versions of Citrix *MULTIUSER LINK*.

Syntax

CML [/HOSTFILE:filename] [/ENTRY:value] [/BATCH] [/?]

or

CML [/NUMBER:phone number] [/DEVICE:devicename]
[/BAUD:value] [/DIRECT] [/BATCH] [/?]

or

CML [/NUMBER:phone number] [/DEVICE:devicename]
[/BAUD:value] [/DIRECT] [/ASCII] [/DATA:value]
[/PARITY:value] [/STOP:value] [/BATCH] [/?]

Options

/HOSTFILE:filename

Defines the host directory file. The default host directory file is *CML.DIR*.

/ENTRY:value

Defines the entry to connect to, within the host directory file. Valid entries are 1-200. This option overrides the default entry a host directory file may have.

/NUMBER:phone number

Defines the phone number to be dialed. There is no default phone number.

/DEVICE:devicename

Defines the device name. The default device name is COM1.

/BAUD:value

Defines the baud rate. Valid baud rates are 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600, 19200, 38400, 57600. The default baud rate is 2400.

/DIRECT

Defines the connection type as direct. The default connection type is modem.

/ASCII

Defines ascii emulation mode. The default emulation mode is Intelligent Console Architecture (ICA).

/DATA:value

Defines the number of data bits. Valid data bit values are 7 and 8. This option is only valid with the /ASCII option. The default number of data bits is 8.

/PARITY:value

Defines the parity setting of the device. Valid parity settings are none, odd, and even. This option is only valid with the /ASCII option. The default parity is none.

/STOP:value

Defines the number of stop bits. Valid stop bit values are 1 and 2. This option is only valid when the /ASCII option is specified. The default number of stop bits is 1.

/BATCH

Disables all prompts for input within *MULTIUSER LINK*. This option should be used when using *MULTIUSER LINK* from a batch file.

`/?` (help)

Displays the syntax for *MULTIUSER LINK* and information about *MULTIUSER LINK*'s options.

Remarks

When CML is invoked with no parameters, it loads the default host directory file (*CML.DIR*) and attempts to connect to the default entry. If no default entry exists, *MULTIUSER LINK*'s main menu is displayed.

CML returns an exit code when it completes; that is, it sends a number back to the system to tell it whether CML ran successfully or not. If CML ran successfully, it returns an exit code of zero; if it did not run successfully, it returns an exit code greater than zero. A batch file can check this value and specify what command is to be executed by placing the command `IF ERRORLEVEL` immediately following the line that runs CML. The DOS or OS/2 User's Guide contains more information on batch files. When using CML from a batch file, the `/BATCH` option should be used.

The following exit codes are returned by CML:

- 0 : successful
- 1 : invalid command line parameter
- 2 : unable to open or create *CML.INI* file
- 3 : unable to open or create host directory file
- 4 : invalid or no default entry within host directory file
- 5 : unable to open device name (e.g. COM1)
- 6 : unable to set device parameters (e.g. baud rate)
- 7 : modem initialization failed
- 8 : connection was terminated by user
- 9 : modem detected a busy signal
- 10 : modem detected a voice, or non-modem tone
- 11 : modem detected either no carrier or no dial tone
- 12 : modem command timeout

Examples

To load the default host directory file and connect to the default entry, the following is entered:

```
CML
```

To load the host directory file *MY.DIR* and connect to the default entry, the following is entered:

```
CML /HOSTFILE:my.dir
```

To load the host directory file *MY.DIR* and connect to entry 5, the following is entered:

```
CML /HOSTFILE:my.dir /ENTRY:5
```

To dial the phone number 555-1212 and connect to a Citrix *MULTIUSER* host 9600 baud, the following is entered:

```
CML /PHONE:555-1212 /BAUD:9600
```

To dial the phone number 305-346-9004 and connect to the Citrix bulletin board at 1200 baud using ASCII emulation mode, the following is entered:

```
CML /PHONE:305-346-9004 /BAUD:1200 /ASCII
```

To direct connect to a Citrix *MULTIUSER* host using COM2 at 19200 baud, the following is entered:

```
CML /DIRECT /BAUD:19200 /DEVICE:COM2
```


APPENDIX A

ASYNCHRONOUS COMMUNICATIONS AND CABLING

INTRODUCTION

MULTIUSER LINK operates in both OS/2 and DOS environments. However, the communication capabilities are different for each environment. For ease of setup and understanding, specific information is provided as to how *MULTIUSER LINK* operates in each environment.

DOS

For DOS only 4 serial ports are supported. These ports are found in the 40:0 BIOS data area. The port requested is assumed to be the base I/O address of a 16450 async device or equivalent. Serial port 03F8H is assumed to operate at IRQ 4. The remaining serial ports are assumed to operate at IRQ 3. *MULTIUSER LINK* expects exclusive ownership of the IRQ level requested. Software or hardware that cause IRQ level conflicts will produce unpredictable results.

OS/2

For OS/2 any number of async devices are supported and any async device name can be used as defined by the async device driver.

CABLING *MULTIUSER LINK*

The following cable wiring diagrams are provided for connecting PCs and modems to a Citrix *MULTIUSER* host. Serial data ports can be wired in a variety of ways. For best results in configuration, performance, and system diagnostics, the following wiring techniques are recommended. The following table describes the signals from the EIA RS-232 standard, using D-shell 25 pin connectors.

RS-232 Standard DTE and DCE Pin Definitions

<u>DTE</u>	<u>DB-25</u>	<u>Signal</u>		<u>DCE</u>
<u>Connection</u>	<u>Pin #</u>	<u>Name</u>	<u>Description</u>	<u>Connection</u>
Output	2	TxD	Transmit Data	Input
Input	3	RxD	Receive Data	Output
Output	4	RTS	Request To Send	Input
Input	5	CTS	Clear To Send	Output
Input	6	DSR	Data Set Ready	Output
Ground	7	GND	Signal Ground	Ground
Input	8	DCD	Data Carrier Detect	Output
Output	20	DTR	Data Terminal Ready	Input
Input	22	RI	Ring Indicator	Output

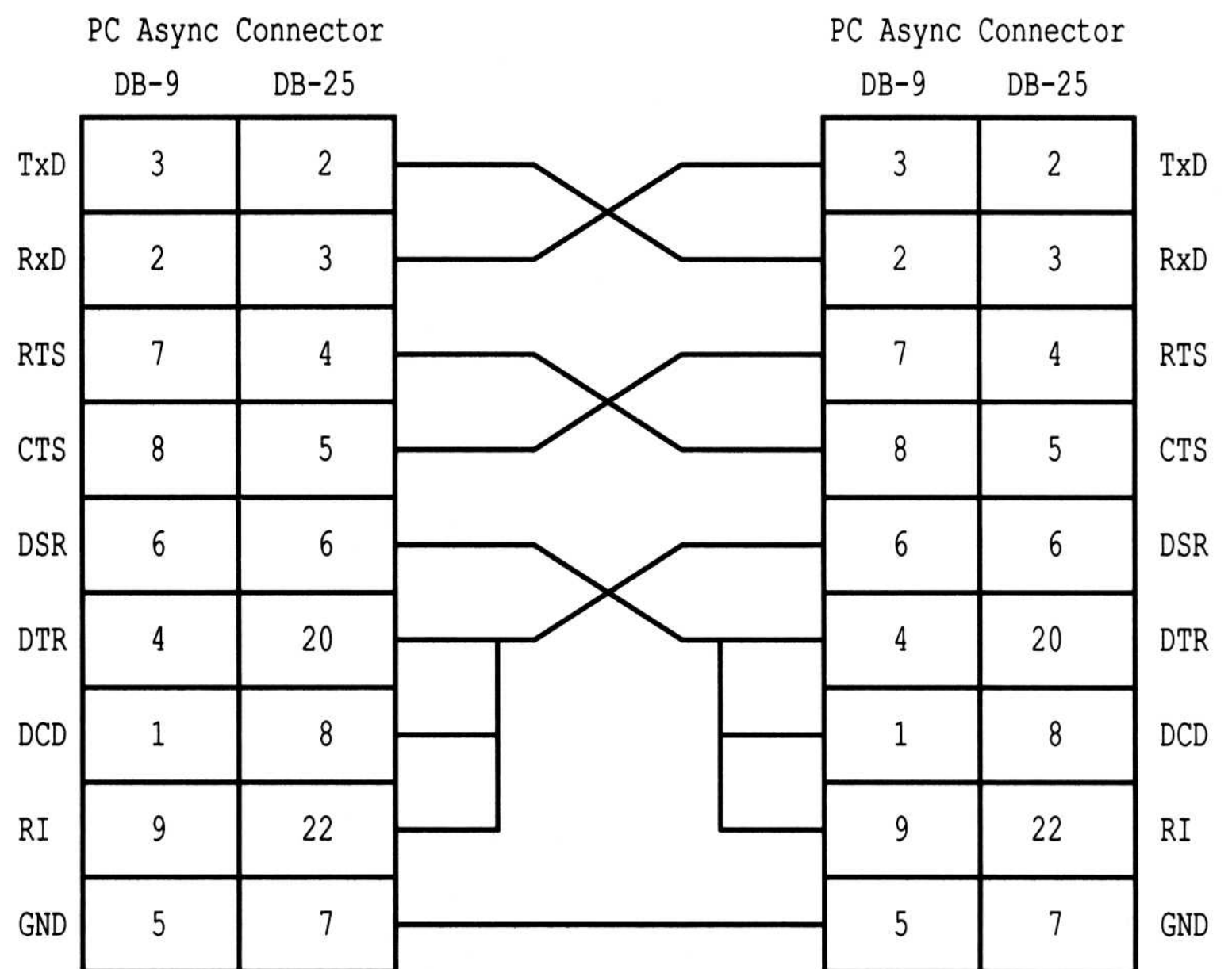
Modem Connection Configurations (DTE to DCE)

This wiring configuration can be used for connecting a PC to a modem. Two types of async connectors are typically found on PCs. Most external modems have a DB-25 connector. Internal modems have the async port included and require no async cabling. The following diagram describes how to connect a PC to an external modem for both combinations of DB-9 and DB-25 connectors to DB-25.

PC Async Connector			Modem Connector		
	DB-9	DB-25		DB-25	
TxD	3	2		2	TxD
RxD	2	3		3	RxD
RTS	7	4		4	RTS
CTS	8	5		5	CTS
DSR	6	6		6	DSR
DTR	4	20		20	DTR
DCD	1	8		8	DCD
RI	9	22		22	RI
GND	5	7		7	GND

Direct Connection Configurations (DTE to DTE)

This wiring configuration can be used for connecting PC to PC. When one PC is used as a terminal running *MULTIUSER LINK* and connected directly to a Citrix *MULTIUSER* host, it is referred to as direct connect. Two types of async connectors are typically found on PCs. Connections other than DB-25 or DB-9 (RJ-12 or RJ-45) may be encountered when connecting directly to the host system. In these cases, refer to the adapter's manual for specific connection information. The following diagram describes how to connect PC to PC for combinations of DB-9 and DB-25 connectors.



APPENDIX B

FILES USED BY *MULTIUSER LINK*

Listed below are the various files used by *MULTIUSER LINK*:

CML.EXE

Contains the DOS version of the *MULTIUSER LINK* program. This file is provided on the *MULTIUSER LINK* Install disk.

CML2.EXE

Contains the OS/2 version of the *MULTIUSER LINK* program. This file is provided on the *MULTIUSER LINK* Install disk.

CML.INI

Contains information specified in the "Setup Menu." This file resides in the directory specified by the user's HOME environment variable. If the HOME environment variable does not exist, *CML.INI* resides in the directory that contains *CML.EXE*. This file is created the first time *MULTIUSER LINK* is run.

CML.DIR

Contains the default host directory. This file resides in the directory specified by the user's HOME environment variable. If the HOME environment variable does not exist, then *CML.DIR* resides in the directory that contains *CML.EXE*. This file is created when the first host entry is created.

CML.HLP

Contains help information that is accessed when **F1** is pressed. This file is provided on the *MULTIUSER LINK* Install disk.

CML.ICO

Contains a *MULTIUSER LINK* icon for Windows 3.0. This file is provided on the *MULTIUSER LINK* Install disk.

README.DOC

Contains information that is intended to supplement the publications that comes with *MULTIUSER LINK*. This file is provided on the *MULTIUSER LINK* Install disk.

INSTALL.EXE

Contains the DOS and OS/2 version of the *MULTIUSER LINK* install program. This file is provided on the *MULTIUSER LINK* Install disk.

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